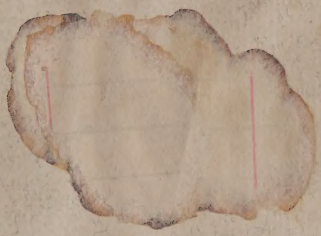
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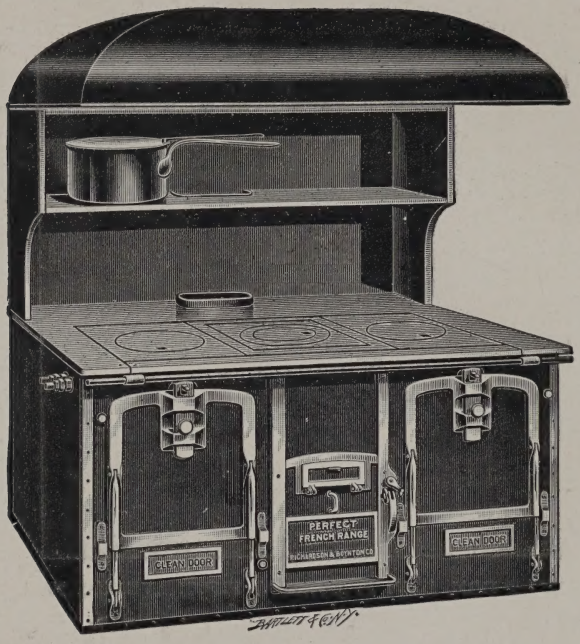
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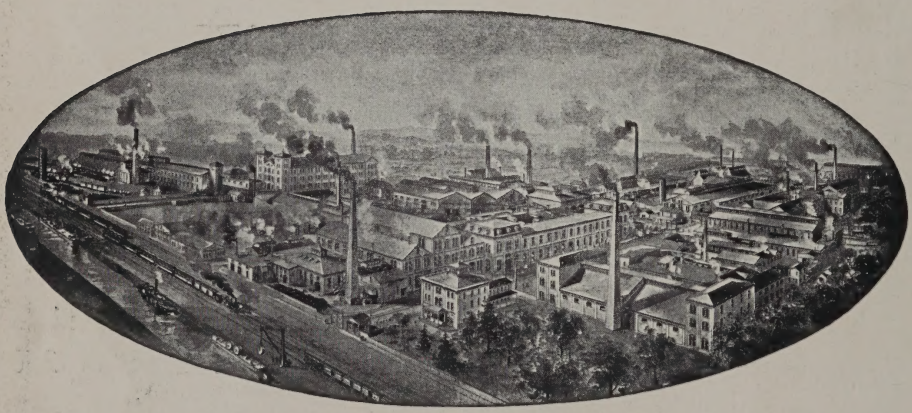
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CONTENTS

25¢

EPISCOPAL THRONES AND PULPITS, . 441
Caryl Coleman.

MODERN ARCHITECTURE AND DECORATION IN FRANCE, . . 465
Jean Schopfer.

NEW YORK APARTMENT HOUSES, . 477
Charles H. Israels.

MURAL PAINTING AND A WORD TO ARCHITECTS, ... 510
Frank Fowler.

THE NEW YORK STOCK EXCHANGE, . 526
Percy C. Stuart.

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Brass and Bronze Workers,	Jno. Williams,	23
	Yale & Towne Mfg. Co.,	8
	Russell & Erwin Mfg. Co.,	13
	P. & F. Corbin,	16
	Reading Hardware Co.,	20
	Richey, Browne & Donald,	26
Brick,	Sayre & Fisher Co.,	17
Builders,	Chas. T. Wills,	Second Cover
	D. C. Weeks & Son,	1
	Thompson-Starrett Co.,	21
	Tide Water Building Co.,	19
Builders' Hardware	Yale & Towne Mfg. Co.,	8
	Russell & Erwin Mfg. Co.,	13
	P. & F. Corbin,	16
	Reading Hardware Co.,	20
Cement,	Atlas Portland Cement Co.,	14
	Lawrence Cement Co.,	40
	New York and Rosendale Cement Co.,	32
	Sears, Humbert & Co.,	29
Coverings for Pipes and Boilers,	Robert A. Keasbey,	38
Cut Stone Contractors	B. A. & G. N. Williams,	24
	George Brown & Co.,	28
Decorations,	W. & J. Sloane,	22
	Chas. R. Yandell & Co.,	39
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	Cooper & Wigand	Back Cover
Engines,	Westinghouse Machine Co.,	15
	Westinghouse Electric & Mfg. Co.,	15
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Fireplaces,	Bradley & Currier Co.,	37
Fireproofing,	The Roebling Construction Co.,	4
Furnaces and Ranges,	Richardson & Boynton Co.,	2
	The Thatcher Furnace Co.	38
General Contractors,	Charles T. Wills	Second Cover
	D. C. Weeks & Son,	1
	Thompson-Starrett Co.,	21
	Tide Water Building Co.,	19
Granite and Stone,	George Brown & Co.,	28
	B. A. & G. N. Williams,	24
	Geo. W. White & Co.,	33
Horticultural Builders,	Hitchings & Co.,	31
	Lord & Burnham Co.,	36

ADVERTISERS' DIRECTORY.—*Continued.*

BUSINESS.	NAME.	PAGE.
IRON AND METAL WORKERS,	The American Bridge Company,	Third Cover
	Jno. Williams,	23
	Cooper & Wigand	Back Cover
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	Russell & Erwin Mfg. Co.,	13
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	Russell & Erwin Mfg. Co.,	13
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MANTELS,	Bradley & Currier Co.,	37
MARBLE WORKERS,	Batterson & Eisele,	25
	Rob't C. Fisher & Co.,	18
	John H. Shipway & Bro.,	27
MOSAIC WORKERS,	Batterson & Eisele,	25
	Rob't C. Fisher & Co.,	18
PARQUET FLOORS,	G. W. Koch & Son,	35
PUBLICATIONS,	Principles of Architectural Composition,	34
	The École des Beaux Arts,	3
SHINGLE STAINS,	Dexter Bros.,	38
	Samuel Cabot	37
STEAM AND HOT WATER HEATERS,	Westinghouse, Church, Kerr & Co.,	15
	Richardson & Boynton Co.,	2
	Hitchings & Co.,	31
	Thatcher Furnace Co.,	38
STONE,	Geo. W. White & Co.,	33
	George Brown & Co.,	28
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CONTENTS

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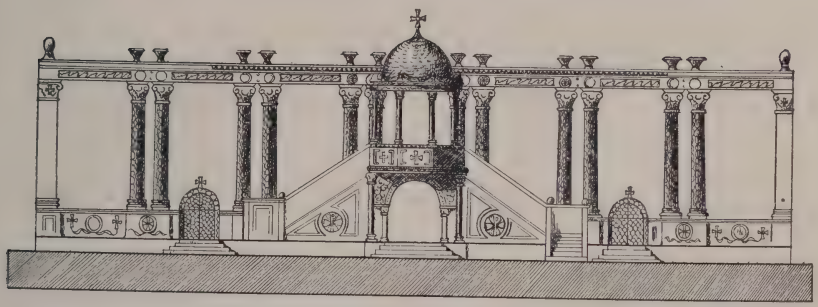
VOLUME XI

JULY, 1901, TO APRIL, 1902, INCLUSIVE.

	PAGE
A DIFFICULTY AND ITS SOLUTION,	111
A JACOBEAN MANOR HOUSE, Russell Sturgis,	666
AMERICAN COUNTRY LIFE AND ART,	112
AN OPPORTUNITY FOR THE TRAINED ARCHITECT,	713
ARCHITECT'S PORTFOLIO,	717, 83
ARCHITECTURAL ABERRATIONS, No 17, The New York Family Hotel,	700
ARCHITECTURE IN THE BILLIONAIRE DISTRICT OF NEW YORK CITY, Franz K. Winkler,	679
CERAMICS IN ARCHITECTURE, Jean Schopfer,	1
ENGINEERING ÆSTHETICS,	715
EPISCOPAL THRONES AND PULPITS, Caryl Coleman,	441
FLAGG, ERNEST, THE WORKS OF,	April Number
MODERN ARCHITECTURE AND DECORATION IN FRANCE, Jean Schopfer,	465
"MONUMENTAL" ENGINEERING, Montgomery Schuyler,	615
MONT S. MICHAEL, Montgomery Schuyler,	9
MURAL PAINTING AND A WORD TO ARCHITECTS, Frank Fowler,	510
NEW YORK APARTMENT HOUSES, Charles H. Israels,	477
OLD AND NEW METHODS,	706
OVER THE DRAUGHTING BOARD,	705, 110
RECENT AMERICAN ARCHITECTURE,	717, 83
RECENT APARTMENT HOUSE DESIGN, Franz K. Winkler,	98
SOME NOVEL FEATURES IN THE PAN-AMERICAN EXPOSITION, Herbert Croly,	590
THE ARCHITECT'S LIBRARY,	726
THE ARCHITECTURAL DESIGN AS IT IS IN FRANCE, Alb. Allain,	37
THE BUILDING WITHIN,	706
THE CONTEMPORARY SUBURBAN RESIDENCE,	69
THE DECORATION OF THE SMALLER SUBURBAN HOUSE IN ENGLAND, Banister Fletcher,	641
THE DESIGN OF OUR TALL OFFICE BUILDINGS THE LATEST PHASE,	705
THE FIRST U. S. GOVERNMENT ARCHITECT, Frederick D. Owen,	581
THE MODERN RAILROAD STATION, No. 1, The Quai d'Orsay Terminus, Paris, Jean Schopfer,	557
THE NEW YORK STOCK EXCHANGE, Percy C. Stuart,	526
THE PASSING OF THE 25X100 LOT IN NEW YORK CITY,	711
THE VILLA GARDEN, George F. Pentecost, Jr.,	61
THE YOUNG BARBARIANS AT PLAY,	114

The
Architectural Record.

VOL. XI. JULY, 1901. No. 1



THE PULPIT OF THE CHURCH OF SANTA SOPHIA. A WORK OF THE VI. CENTURY.

EPISCOPAL THRONES AND PULPITS.

ARCHITECTURE is commonly said to be "the art of planning and constructing a house,"[1] or "the science and art of designing and constructing buildings,"[2] or the "art of building, specifically of fine or beautiful buildings,"[3] or it is "a decorative fine art; that is it consists in applying fine art to certain objects of utility—in this case to buildings."[4]

It is believed, upon a careful scrutiny of these definitions, one and all, it will be found that they are inadequate, for it would seem as though there was more in "The noble art," than they imply. Is not architecture in truth the art of creating a building in all its completeness—in all that is understood by the words construction and proportion, decoration and fixed furniture, utility and fitness.

The art embraces many arts and a number of sciences: "The synthesis of the fine arts, the commune of the crafts." At least this was Virtruvius' understanding of the subject, for he says the following arts and sciences should come within the knowledge of an architect: Drawing, geometry, optics, arithmetic, physics, music, and the laws governing buildings and contracts.[5] Optics in

[1]Stormouth's Dictionary.
[2]Standard Dictionary.
[3]Century Dictionary.
[4]Russell Sturgis.
[5]The Architecture of Marcus Virtruvius Palleo, B. I., London, 1874.

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his mind no doubt covered the relationship of color, the effects of light and shade, while music dealt with harmony of form and color, the ensemble and the environs.

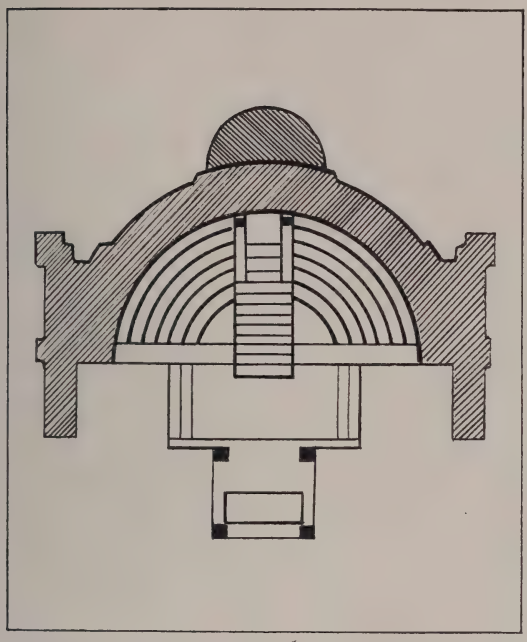
It is evident, from the foregoing, that a true architect must be a man of broad culture and large knowledge, especially in these days of electrical appliances and sanitary plumbing, scientific heating and ventilating, together with the thousand and one requirements incident to nineteenth-century civilization and comfort; he must, in fact, be a student of all the fine arts, of history, of archæology, and of many old and new sciences, as modern architecture is largely elective.

The perfect architect, one filling the demand of the above specifications, is indeed an ideal being. Nevertheless, growth and progress suggest that all should aspire to that perfection. "We see how few of those," says Virtruvius, "who profess a particular art, arrive at perfection in it, so as to distinguish themselves; hence, if but a few of those practising an individual art obtain lasting fame, how should the architect, who is required to have a knowledge of so many, be deficient in none of them. An architect, therefore, is sufficiently educated, whose general knowledge enables him to give his opinion on any branch when required to do so." It is quite clear that no architect can grasp all the direct or indirect knowledge belonging to his profession. A man so gifted is rarely met with; nor can he even hope to excel in all branches of his art, for the field is far too great. It often happens that the special knowledge requisite for one branch is of very little moment in another. For example: The architect who devotes his attention to ecclesiastical architecture, must be conversant with the Scriptures, church history, sacred iconography, smybology and ecclesiology; on the other hand a familiarity with these subjects would be useless to an architect whose business it is to erect office buildings and other commercial structures.

The one branch in which there is greater liability to err than in any other, is that appertaining to building churches (not meeting-houses), particularly the ecclesiastical section, and all from a want of knowledge of the accessory arts and sciences belonging to ecclesiastical architecture.

In order to encourage, or even provoke, a study of ecclesiology among architectural students, the writer, from time to time, has published in the pages of this magazine[6] and other journals, tentative articles on ecclesiological matters of the greatest importance. Having this end still in view, the following brief notes concerning "Ecclesiastical Thrones and Pulpits," were written; notes drawn from the author's memoranda, an accumulation of years of obser-

[6]Architectural Record, Vols. IV. and V., 1895-'96.



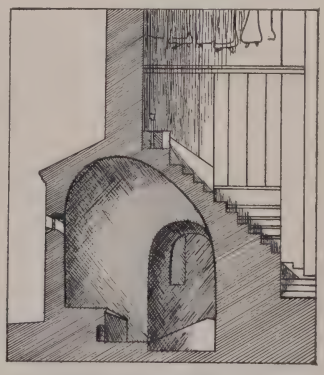
Plan of the Episcopal Throne in the Cathedral at Torcello (7th Century).

vation, from a careful examination of existing examples, and from a study of the canon laws governing these objects.

In the houses of the people of Israel there was always a seat set apart for the use of the aged, the wise and the powerful—a custom alluded to in a number of passages in the old Testament, and common to many nations of antiquity, more especially in the Orient. Hence, it was nothing new when the primitive Christians, and those of later days, set apart, in their places of assembly, a particular seat or chair for the use of their presiding officer or teacher.

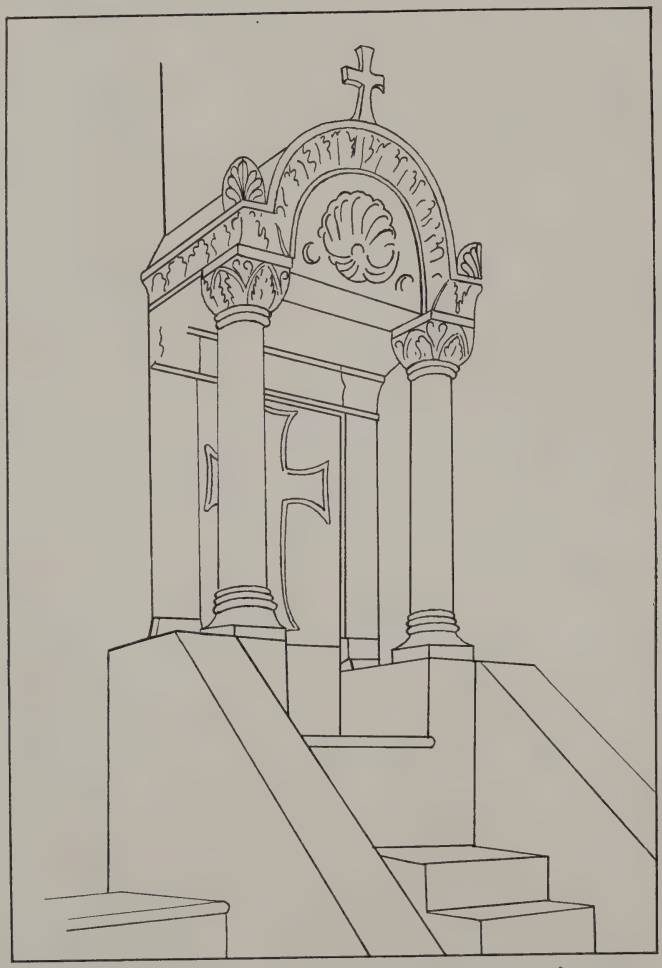
The words of King David: "Let them exalt him in the church of the people, and praise him in the chair of the ancients," are most applicable to the enthronement of a bishop, for he is one who has been lifted up into the high place in the church. The chair assigned to a bishop, from the first, was raised above those of the rest of the clergy and was looked upon as a symbol of Episcopal authority. It was from thence he instructed his people in the Word of God, ordained and sent on their mission the clergy of his jurisdiction.

The earliest Episcopal chairs were nothing more or less than pieces of domestic furniture, but when the Christians began to have among them converts from the upper classes of the Roman world,



A Longitudinal Section of the Episcopal Throne in the Cathedral at Torcello (7th Century).

two forms of official chairs came into use which had been employed at public functions by the law officers and other important persons of the empire: the *sella gestatoria*, and the *sella curulis*. The first was box shaped, with a square base, a high back, without arms and furnished on each side with rings through which carrying shafts



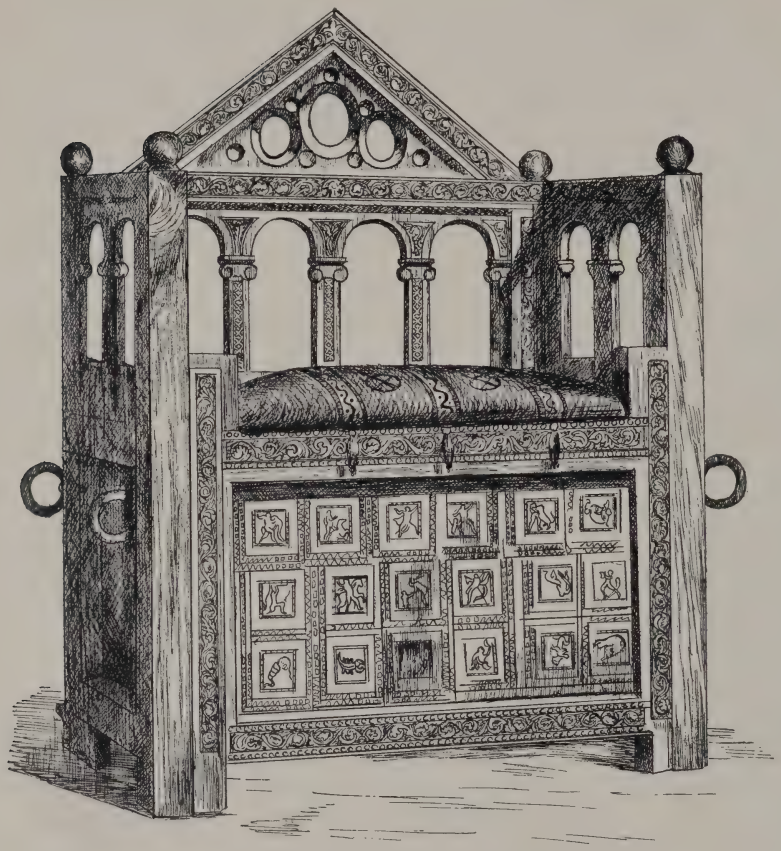
ELEVATION OF THE EPISCOPAL THRONE IN THE CATHEDRAL AT TORCELLO (7th CENTURY).

could be passed. This last feature is no longer in use, except on the *sella gestatoria* of the Pope. The other form was a folding chair with crossed legs like the celebrated chair of Dagobert now in the Hotel Cluny at Paris. Both of these forms are still employed.

The Episcopal chair in the early days was always placed at the end of the tribune, behind the altar facing the people, and so high up that the bishop could overlook the whole congregation. The words of the Apostolic Constitution (B. II., Sec. 28) direct that a

church shall be built in the form of a ship: "Let the Church be long, like a ship; at the east end, in the center, let the bishop's throne be placed, and let the presbyters be seated on both sides of him; and let the deacons stand near at hand." S. Ambrose, in a letter, written in the year 379, to Constantius, a newly made bishop, had the same thought in mind for he likens the church to a ship upon the sea of life. "You," he says, "have undertaken the office of a bishop, and now, seated in the stern of the church, you are steering it in the teeth of the waves." This arrangement of the Episcopal chair is found in S. Peter's at Rome, and in a number of the other cathedrals (*the cathedra churches*) of Italy, France and Germany. These special thrones, approached by flights of stairs (*absidae gradutae*), were generally immovable, and usually built of marble or stone; sometimes they were covered by canopies made of rich stuffs, a form of ornamentation in use as early, if not earlier than the fourth century, for S. Augustine refers to them in a letter written to Maximin in year 392 under the name: *cathedrae velatae*. On either side of the chair, along the walls of the apse, but at a lower level, were the seats of the clergy. Many of these early chairs or thrones were ornamented with lions heads, or with those of dogs, which were believed to be symbolical of certain virtues most necessary to a bishop; the lion from time immemorial has been a symbol of authority and justice, and it will be remembered that two lions stood, one on each side, by the throne of the wise King Solomon (I. Kings x., 19); and the two marked characteristics of a dog are vigilance and fidelity.

The Christians of the primitive and mediæval church were wont to regard with great veneration the thrones of their bishops, more particularly the chairs of those they looked upon as saints. Their feeling in this respect is found chronicled in as early a writer as Eusebius, who says in the IV. Book and nineteenth chapter of his history, that "the chair of S. James at Jerusalem has ever been held in veneration," so it is not surprising that many of the very first Episcopal thrones have come down to the present day. For a long while it was believed that the most ancient Episcopal chair in existence was the one at S. Peter's Church at Rome, which, it was said, once belonged to the Senator Prudans, and had been used by Saint Peter. Although this statement has been disputed by Garrucci and other distinguished Christian archæologists, it is admittedly a very old chair, and an excellent example of an early Episcopal cathedra. It is without arms, the back is in the form of a low pediment, and it is made of wood inlaid with ivory mosaics and carvings, representing the works of Hercules, and is similar to the chair in which S. Silvester is seated in the mosaic dome of the apse of S. John Lateran.



ST. PETER'S CHAIR AT ROME.

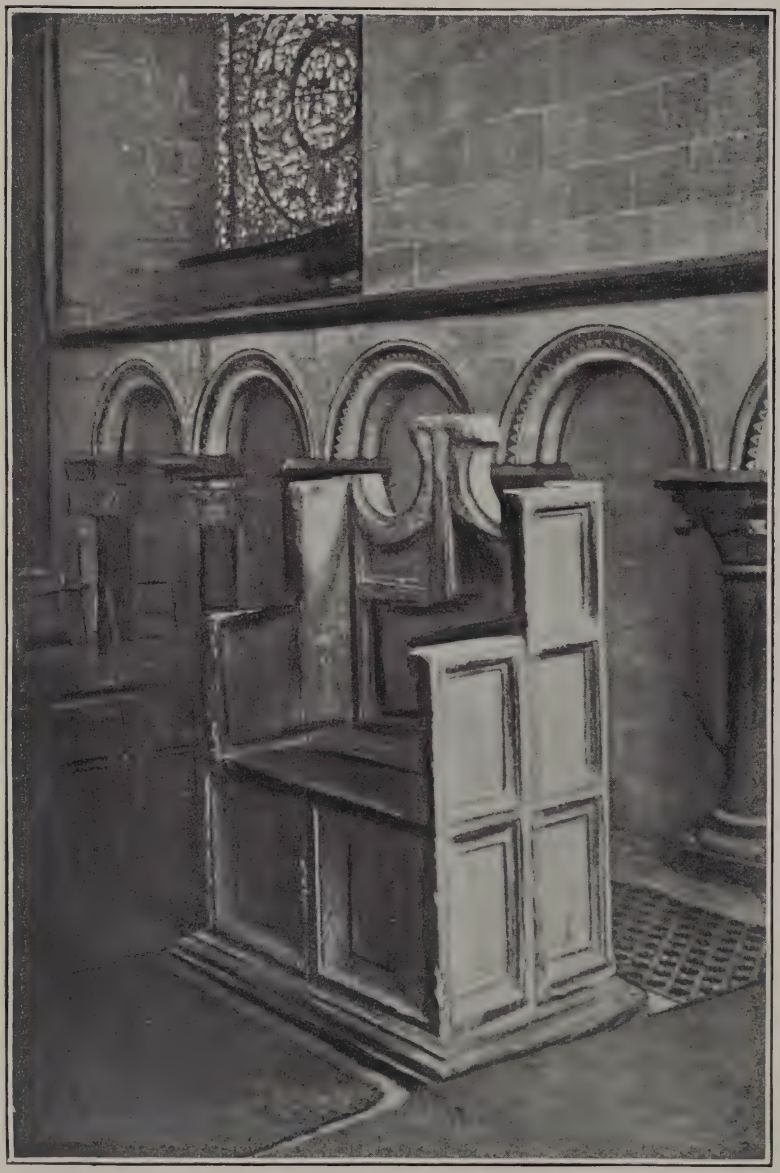
The Episcopal thrones found in the catacombs are nothing but high-backed chairs cut out of the tuf-rock; while those in the more ancient Roman churches—Saint Clement, Saint Mary in Cosmedin, etc.—are marble chairs taken from the Roman baths, in which there were endless numbers. The Thermæ of Caracalla alone possessed six hundred (Montfaucon, Iter. Ital. p. 137).

Everywhere in Italy and in many other parts of Christendom, with few exceptions, down to a late date, Episcopal thrones were almost always made of marble, and if they were not actually *thermae* chairs, they partook of their character: simple in ouline, free from ornamentation, except at the ends of the arms and feet, which were usually sculptured. After the advent of the Cosmati family of mosaicists, in the twelfth century, the Italian thrones were enriched with panels and bands of colored glass and marble mosaic inlays, which materially added to their beauty. Of the early wood and ivory thrones, which were always few compared with those of marble and stone, a very good idea can be obtained from the mo-



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THE EPISCOPAL THRONE OF THE SEE OF ROME IN THE CHURCH OF S. GIOVANNI IN LATERANO. THE CHAIR IS ONE TAKEN FROM A ROMAN THERMAE.



THE EPISCOPAL CHAIR OF ST. AUGUSTINE AT CANTERBURY.

saics in S. Pudentiana and other Roman churches, and also in Santa Sophia, as illustrated in Zalzenberg's Baudenkmale von Constantinople. At Ravenna in Italy there is an Espicopal chair of this nature, one of the most celebrated examples of Byzantine work in ivory, now in existence, which was made for Maximian, who was Archbishop of Ravenna from A.D. 546 to 556. The front is square, the back round and high, the frame is of wood "entirely covered with plaques of ivory, arranged in panels with scenes from the Gospel and figures of saints richly carved in high relief. These plaques have borders with foliated ornaments, birds and animals, flowers and fruits, filling the intermediate spaces."

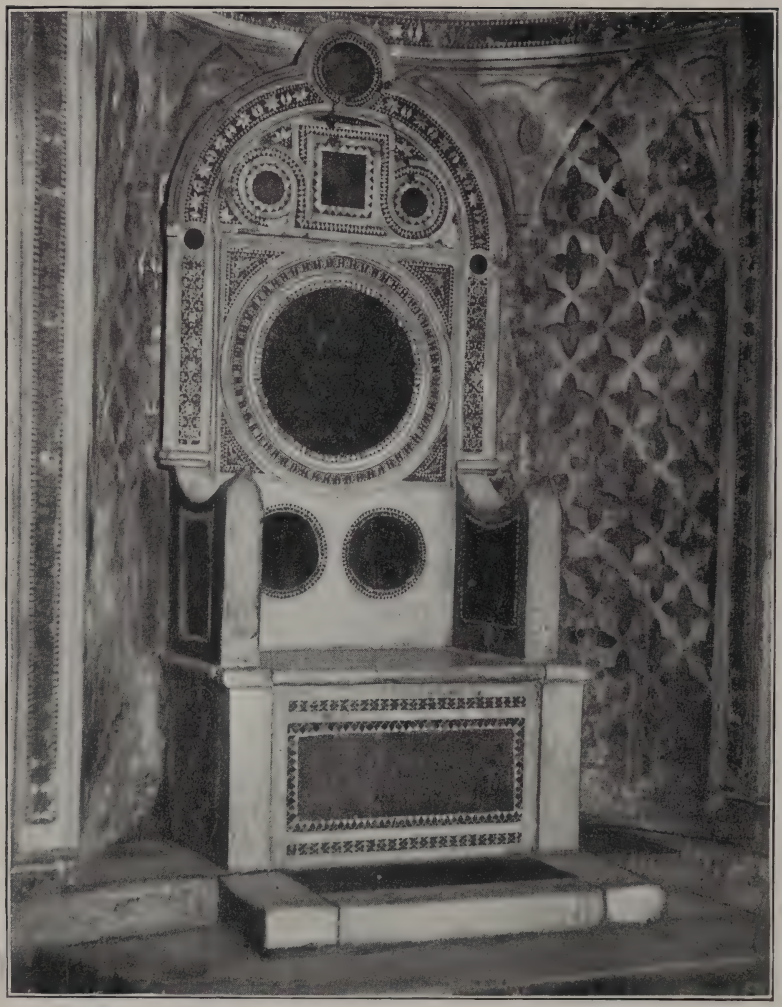
When Gothic architecture came into vogue it brought with it wooden thrones, most beautifully carved. Then it was that the situation of the throne was gradually changed from the bottom of the apse to the Gospel side of the chancel, where it has remained ever since. The modern Episcopal throne stands west of the altar, and on the north side of the chancel, upon a platform of three steps, with the upper step (the platform proper) wide enough at the two sides to accommodate a chair for the use of the assistants. The throne is either covered with a baldacchino or with a fixed canopy, or it is backed with a dossal, but whichever one is employed it is never wider than the throne. From the very first ages of the Faith it has been the custom to canopy the throne, either with textile fabrics or with permanent constructions of marble, stone, metal or wood.

The second form of the Episcopal chair, alluded to above, the *sella curulis*—a faldstool—although still in use, is of little importance professionally to the architect, because it is a portable seat.

Next to the Episcopal throne the most important piece of ecclesiastical fixed-furniture is the pulpit, and in some ways more important, as it is almost a necessity in every church, large and small, while an Episcopal throne is little used outside of a cathedral.

The word pulpit is derived from the Latin *pulpetum*, a stage or platform of boards. The English substantive, according to modern usage, names a raised desk from whence the Gospels and Epistles are read, or from whence the sermon and other communications are delivered to the congregation, whenever assembled.

One of the earliest descriptions of a pulpit, if not the first, is the meager account of one erected by King Solomon in the great court of the temple: "A brazen scaffold, of five cubits long, and five cubits broad and three cubits high." If there was a pulpit in the second temple, which was built some five hundred years after that of Solomon's, no record of it has been kept, but it is known that the Jewish preachers of the time were in the habit of using pulpits, for when Ezra came to Jerusalem (B.C. 458), on his missions of re-



AN EPISCOPAL THRONE OF THE 12th CENTURY IN THE CHURCH OF S. BALBINA AT ROME.

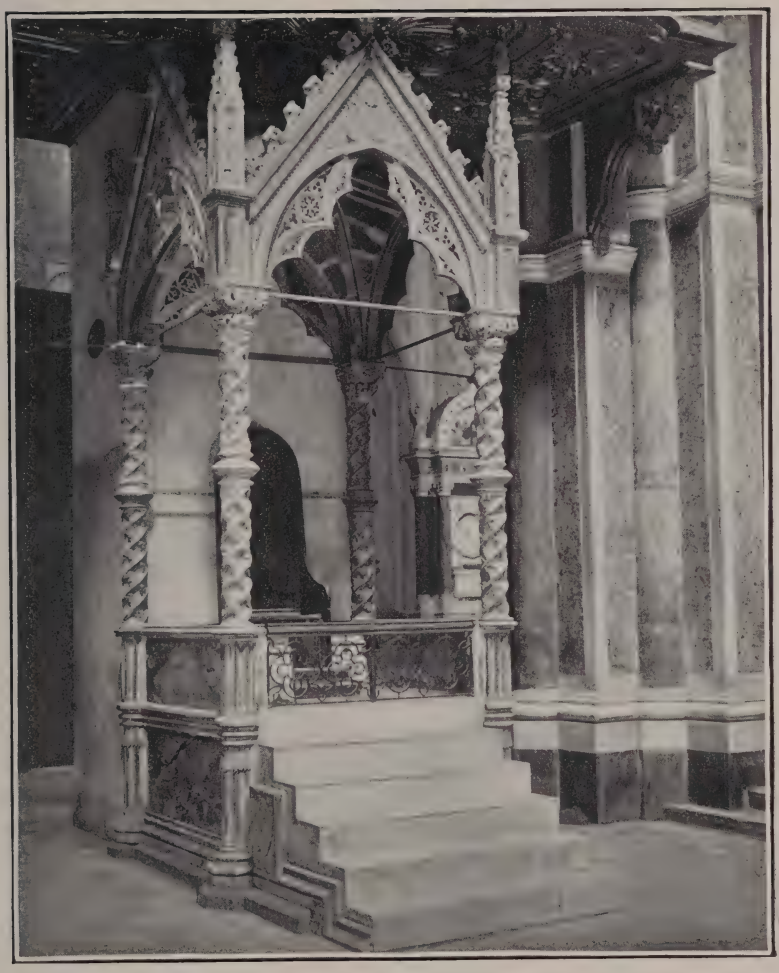


THE EPISCOPAL CHAIR OF MAXIMIAN, ARCHBISHOP OF RAVENNA FROM A. D. 546 TO 556. MADE OF PLAQUES OF IVORY. BYZANTINE WORK.



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AN EPISCOPAL THRONE OF WOOD (13th CENTURY) FROM VIOLLET-LE-DUC.



THE EPISCOPAL THRONE IN THE CATHEDRAL AT NAPLES.
A WORK OF THE 13th CENTURY.

form, he preached to the people from a "pulpit of wood, which they had made for the purpose." (Neb. viii., 4.)

Just when pulpits were introduced, into Christian churches, is not known, but it is known, as stated above, that the instructions to the people were at first given from the Episcopal chair, and not from the pulpit, which was used originally as the place from whence the Word of God was read to the congregation.

Most of the basilican churches were provided with two pulpits or ambones—one on the north and the other on the south side of the choir. The ambo on the north side, which was higher than that on the south side, was generally approached by two flights of steps, one from the east and the other from the west; the first was used for entrance and the second for exit. From this ambo the deacon read the Gospels and the diptychs, the excommunications and proclamations, and after a time it was used as a preaching pulpit. Attached to it, or standing near by, was the paschal candlestick. The ambo on the south side of the choir, from whence the sub-deacon delivered the epistles, usually had but one flight of steps, and sometimes on the landing of the first two steps there stood a small reading desk for the use of the cantor. Such an arrangement of ambones may be seen still in the Church of S. Clement at Rome.

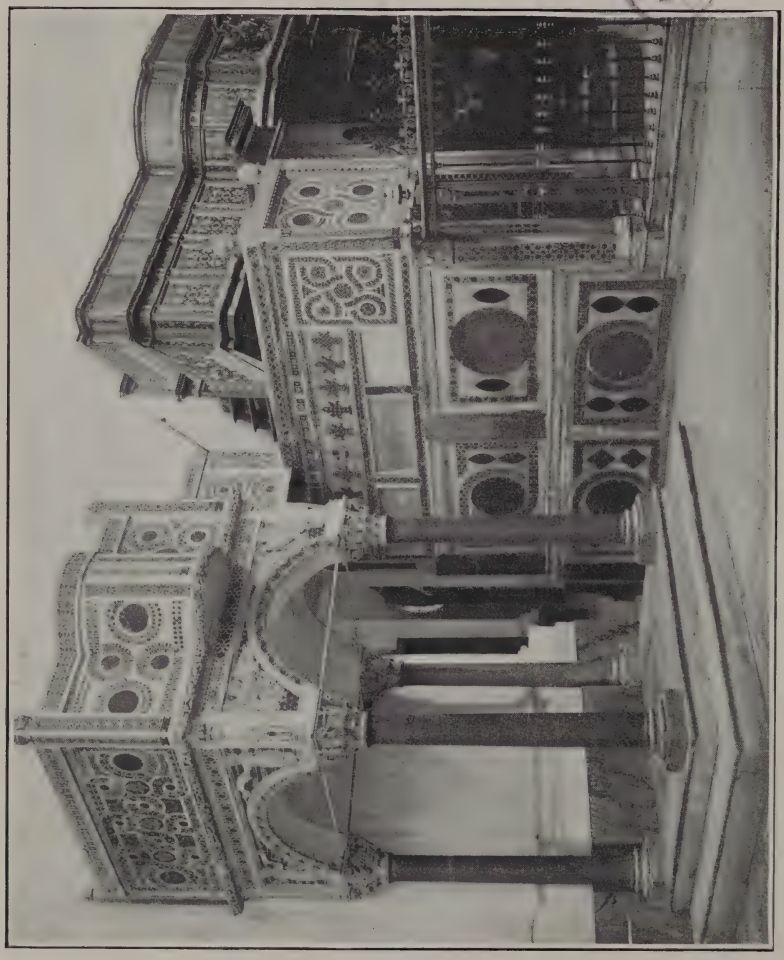
In S. Mark's Church at Venice and in the Duomo at Lesina, as well as in a number of Byzantine churches, the Gospel ambo was built above the Epistle ambo, in other words it was two stories high. The symbolism is obvious: The Gospel was read in the higher place that it might be heard everywhere. "Their sound is gone out unto all lands;" but the Epistle was read in the lower place, as typefying the law, which was confined to Judea. The desk of these and other ambones, on which rests the book of the Gospels, was supported upon the out-spread wings of an eagle, according to the word of David: "He came upon the wings of the winds."

During the seventeenth and eighteenth centuries in the Church of England, and its colonial offshoots, this style of pulpit, vulgarly called a double-decker, was much in use. A good example, antedating the Revolution, may be seen in Saint Michael's at Charleston, S. C.

In Italy, during the fifteenth and sixteenth centuries, enclosed pulpits approached by one flight of steps, superseded the ambones of earlier days. At first they were in the form of a sarcophagus-like box, standing on four pillars, and often provided with two desks, one for the Gospel and the other for the Epistle; later they were made either on an octagonal or hexagonal plan. The marble pulpit in the Baptistry at Pisa, a masterful work that marked an

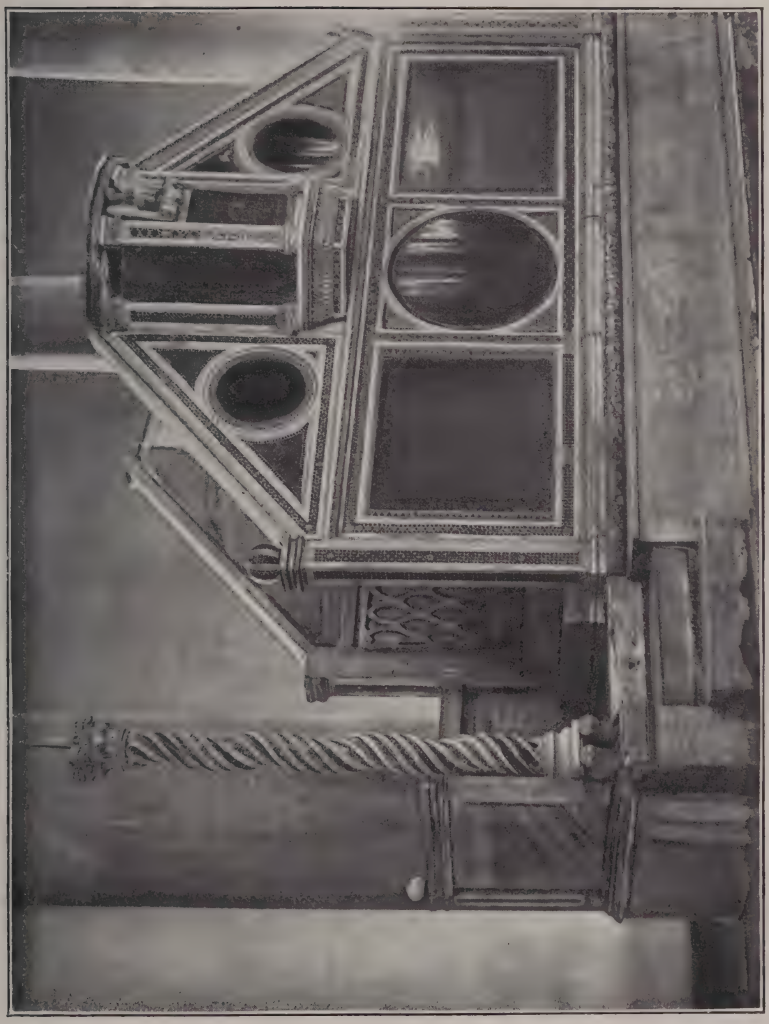


THE PULPIT IN THE CHURCH OF S. BARTOLOMEO AT PISTOIA.
A WORK OF A. D. 1250.



A PULPIT IN THE CATHEDRAL OF SALERNO, BUILT IN THE 13th CENTURY WITH MARBLES FROM THE RUINS OF ROME, ENRICHED WITH MOSAIC BY JACOBUS, THE 2d COSMATI.

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GOSPEL AMBO IN THE CHURCH OF S. LORENZO FUORI LE MURI AT ROME.
IN MARBLE AND COSMATI MOSAIC; 12th CENTURY.

era in Tuscan art, the work of Nicola Pisano (A.D. 1205-1278), is a hexagon, supported on seven columns, six corresponding to the angles of the hexagon and resting alternately on lions and on simple blocks, and the seventh, larger than the others, placed in the centre, resting on a curious combination of human figures and monsters. The upright sides of the hexagon are divided from one another by groups of triple columns, and the five closed spaces or panels, are filled with bas-reliefs, in alabaster and Parian marbles, representing the Nativity, the Magi, the Circumcision, the Crucifixion, and the Judgment. The pulpit is of great interest to all students of architecture, because in its construction the trefoiled arch was first employed, that is in Italy, and became the seed from whence Italian Gothic forms germinated.

The people of Sienna, Vasari says, "Moved by the fame of this work, which was greatly admired, not by the Pisans only, but by all who beheld it, offered Nicola the constructions of that pulpit in their cathedral from which the Holy Gospel is wont to be read." In its execution it betrays a decadence in comparison with that of Pisa, but as he was largely assisted in the work by his son and other scholars, the weaker portions can be justly attributed to them.

It is a question if the great ambo of Saint Sophia at Constantinople in all its magnificence of rose-veined Lynnade marble, wrought silver, inlays of ivory, verde antique and gold mosaic compared in true artistic merit with either of these Pisano pulpits.

At Spoleto there is a thirteenth century pulpit, made of various colored marbles in union with limestone, hexagonal in form, and standing on six octagonal columns, with one face to the angle of the hexagon. This pulpit was imitated in a number of the churches in the cities along the Adriatic on the Istrian and Dalmatian side, with here and there some slight variations. For example, at Trau, the plan was changed to an octagon.

Out of door pulpits, introduced by the friars, are not common in many parts of Christendom. In Italy, the one at Perugia, in the Piazza di San Lorenzo, from which S. Bernardino preached, is an excellent example. In England, prior to the settlement of religion under Elizabeth, there were a number of them, of which the most renowned were S. Paul's Cross at London, and the iron pulpit in the galilee of Durham Cathedral, wherefrom a monk preached "every Holiday and Sunday at 1 o'clock in the afternoon."

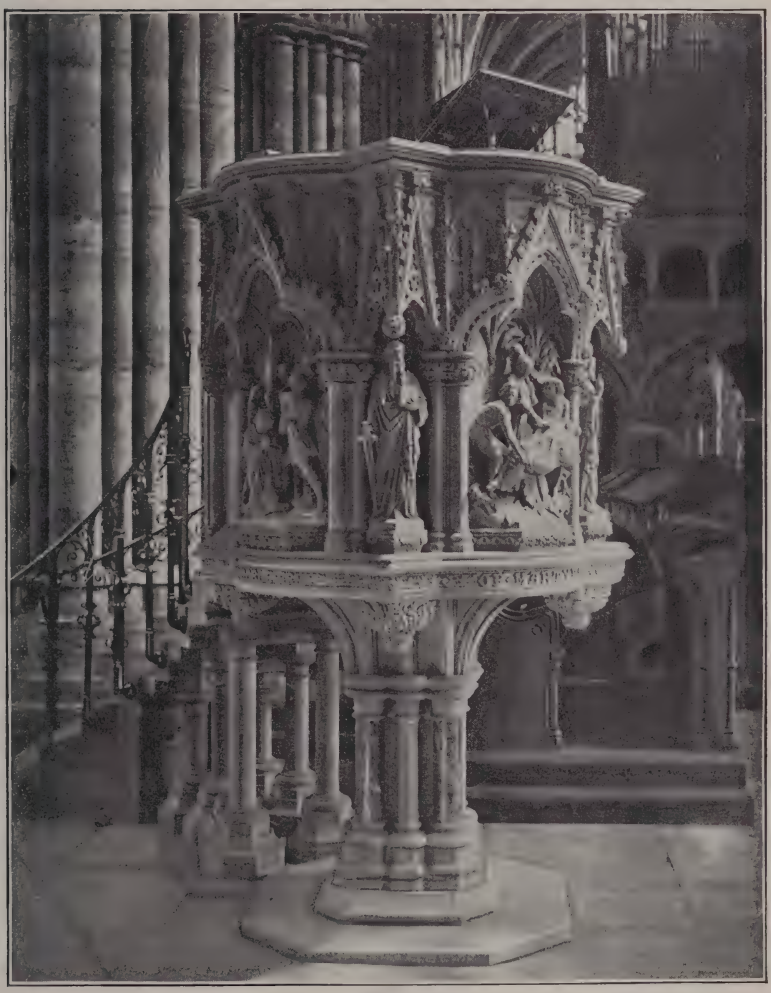
The Reformation greatly augmented the importance of the pulpit, so much so that it soon eclipsed, in Protestant communities, all other ecclesiastical furniture and accessories of public worship, and with the introduction of high-closed pews, it became correspondingly lofty, so that its great height, together with its sounding-board and hour-glass, made it the one objective point in Cathe-



PULPIT IN THE CATHEDRAL AT NARNI. A WORK OF THE 15th CENTURY.

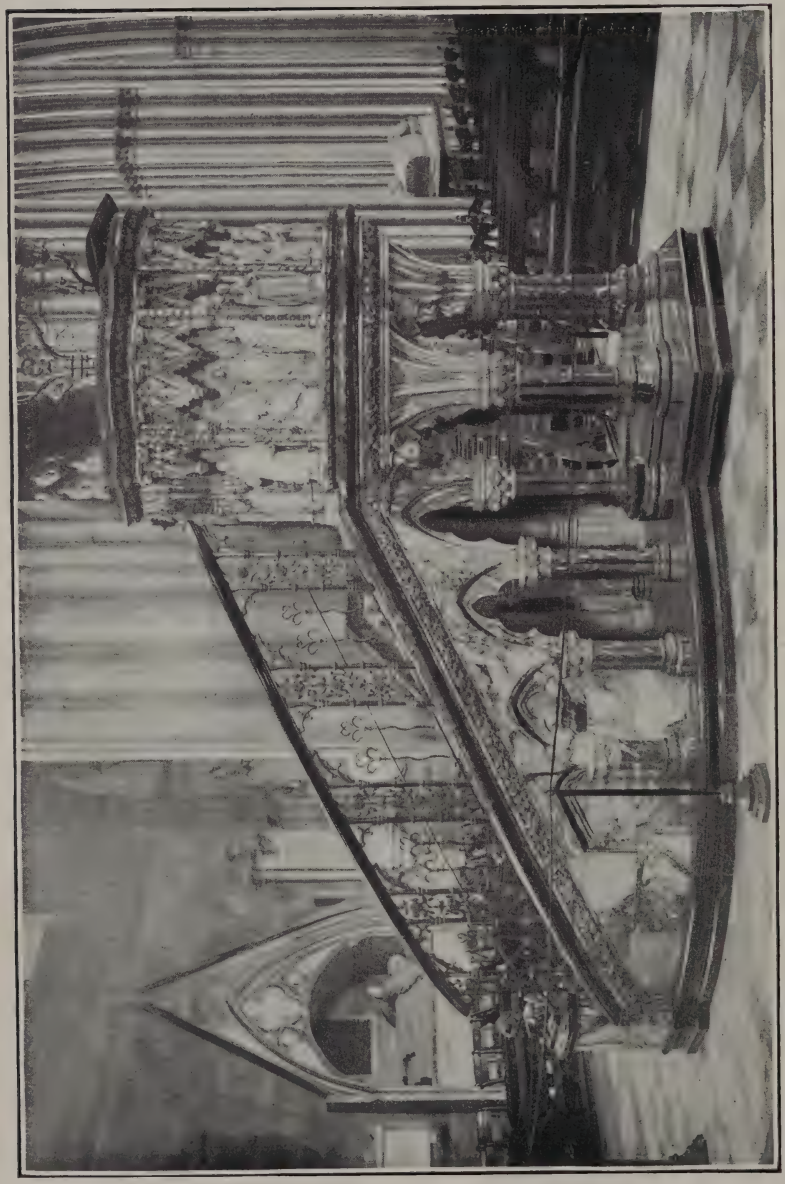


THE PULPIT IN S. ANDREA AT PISTOIA. THE WORK OF GIOVANNI PISANO, A. D., 1298.



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PULPIT IN EXETER CATHEDRAL (19th CENTURY).



PULPIT IN THE NAVE OF WORCESTER CATHEDRAL (19th CENTURY).

drals and Parish churches. To-day, however, through the spread of Catholic thought and the revival of Christian architecture, the pulpit is being rapidly relegated to its proper place, even in non-liturgical denominations.

The modern pulpit is usually built on the Epistle side of the chancel, more rarely on the Gospel side, and often in the nave against the first pillar west of the chancel, on the south and sometimes on the north side. Its exact position, however, depends largely on the acoustic properties of the building. All kinds of material are employed in its construction and ornamentation, and no one form is used to the exclusion of others. In the pulpit at Worcester Cathedral, England, which is fixed against the second pillar in the nave, west of the transept, various marbles, in union with alabaster and metal are used and enriched with sculpture and chiseling, the ornament is elaborate, and the sculptured subjects most interesting—incidents from the Bible and figures of saints.

Caryl Coleman.



From a manuscript of 14th Century.



FIG. 1.—THE ENTRANCE HALL, HOTEL REGINA, RUE DE RIVOL I AND PLACE DES PYRAMIDES, PARIS.
Architect, M. Sibien.

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MODERN ARCHITECTURE AND DECORATION IN FRANCE.

IT would be uttering the veriest commonplaces to speak of the incoherent state of present-day architecture and decoration in France, of its uncertainty as to its proper road, of its new attempts, its return to old modes, its failures and its successes. The Exposition has not served to enlighten us in these respects. It has not brought forth works of a sufficiently marked character to indicate any particular trend or create any movement. On the contrary, these diversified constructions afford us a true picture of the utter chaos in which we are struggling—palaces in classic styles and castles of fancy forms, colonnades flanked by metallic halls, cupolas and timberwork, and an infinite variety of gimcrack plaster-decoration mingled with countless attempts at "modern style," beneath which, nine times out of ten, the decorators have hidden their lack of talent and of notion of line, relief and proportion. All this has been visible—and with what exaggeration!—at the Exposition of 1900.

It is not our intention to conduct the reader through the Exposition, but we will run through Paris and the provinces in search of a few modern works of architecture and decoration that are worth bringing to the notice of American architects and others, who take an interest in the development of this art. We propose to furnish a sort of regular chronicle, consisting of a good many photographs and just enough reading matter to locate the edifice, to indicate the requirements laid down and how they have been met, and to point out whatever we find deserving of praise in the results attained. It goes without saying that our reports will be made in the most eclectic spirit. We shall submit works of the greatest diversity, both as to their purpose and in their style, provided always that each in its way possess an interesting feature.

On the present occasion we will deal with a couple of transformed buildings in the Louis XV. style. They are the work of M. Sibien. M. Sibien was entrusted with the construction of the new Hôtel Regina, which is located at the corner of the Rue de Rivoli and the Place des Pyramides. The plan of the façades of the Rue de Rivoli was fixed upon, *ne varietur*, at the time the street was made. All the fronts are built on the same model; ground floor with an arcade covering the sidewalk; very low entresol under the arcade; high first floor; two other floors of medium height, and attics. Even the dimensions of the windows were specified. Consequently, there was nothing of an interesting character to be done for the Hôtel Regina as regards the outside. The only modification permitted was the abolition of the entresol, in order to give greater

height to the ground floor, and this was done. Within, the architect had more freedom, but he could not alter the arrangement of the upper floors, nor carry the building any higher. He had to be contented with four stories of bedrooms. Ye American architects, who erect hotels of fourteen, sixteen and twenty stories, what say ye of these narrow limits? Four stories and no more! The architect had full scope only with respect to the ground floor. Now, in such a spot as this, the best part of the Rue de Rivoli, having the Louvre Palace opposite and being hampered by the thick pillars of the arcade, it would have been paradoxical to attempt anything in modern style. M. Sibien very wisely confined himself to a free adaptation of ancient styles; but by the exercise of taste and moderation he has produced an interesting work.

Fig. No. 1 shows the entrance-hall, which faces upon the small Place des Pyramides. As is seen, the plan of having large bays, with merely a moulding and, on the crown, a more ornate cartouche, is quite simple in design and not without grandeur. A deep channel with decorative motives connects the walls with the ceiling, which is not loaded with rosework and the like, but extends free of all ornament. The body of the hall is entirely white. The landing at the entresol, looking out upon the Rue des Pyramides, has a balustrade in the same style as the decorations. The doors and windows are filled with glazed paneling, in which we find the same good taste as in the rest of the work. We may add, as marking an interesting date in the importation of American architectural ideas into Europe, that the hall of the Hôtel Regina is the first to be provided with one of those circular doors so commonly employed in the United States.

Fig. No. 2 affords a view of a small waiting-room, and especially of the fine wood carvings which adorn the arch of the door. The design of it is in style, but nowadays one does not often see the Louis XV. treated with such impeccable taste, such freedom from complication in the motives, and such an excellent notion of relief.

Fig. No. 3 is that of a drawing-room, on the Rue de Rivoli. The frieze on the ceiling, the design of the chimneypiece panel, and that of the chandelier, are graceful. The inside of the large panels is filled with silk. This method of decoration is difficult to apply, and does not usually turn out well. In the first place, it should be used generally in the room in which it is employed, and not merely for the large panels. The panel alongside the window is empty. Why? Secondly, these dark-colored panels are out of harmony with the rest of the room, which, like all the ground floor, is in white, which constitutes its originality and its charm. Red or blue hangings are scarcely tolerable in a white frame—in fact, the reverse should be the case, namely, strong tones for the solid frame,



FIG. 2.—WAITING ROOM, HOTEL REGINA.



FIG. 3.—DRAWING ROOM, HOTEL REGINA.

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FIG. 4.—THE RESTAURANT, HOTEL REGINA.

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such as wood, stone or stucco, and soft ones inside, where stuffs are employed. Here it is the contrary: a white frame and a strong color within. The decoration of Louis XV. or Louis XVI. panels is, in truth, an extremely delicate matter. If one avoids the fault just mentioned, by putting quiet shades inside the panels, the chances are very great that the effect produced will be pale, insipid, inharmonious and without emphasis. Almost the only suitable way to fill a panel is to put old tapestry there—tapestry of the period. But everybody does not possess ancient tapestries: they cost too much money. As to modern tapestries, they are execrable. The fact is that, in the eighteenth century, the creators of this style had discovered a charming system of decoration: that of painting the carvings of the wainscoting in a light color upon white. This was, for instance, the case in the decoration of the Louis XV. and Louis XVI. rooms in the Petit Trianon, where the wainscot carvings were in light green on a white ground. The effect must have been delicious. We have lost the practice of doing this, as of doing many other things. Our architects hardly care to venture upon the use of these tones, which need a specially skilful hand to make them a success. With them it is either an extravagance of decoration and gildings without end, or else the whole thing in white. At any rate, in the latter case there is nothing that shocks the eye. We know that the Trianon wainscotings were colored in gray by some ignorant architects of the time of Louis Philippe. We may be sure that they were the grandees of their day—professors at the *Ecole des Beaux-Arts*, members of juries, and so on—and that they had the same instinctive horror of color, which was reputed barbarian and mediæval, as has had all our neo-classic school. The decoration of the Petit Trianon has remained gray.

The next figure (No. 4) shows the restaurant. This room is much more ornate. The panels connecting the corners, and also the spaces between the bays, are painted.

The fifth illustration gives the dining-room, which occupies the place of the courtyards of the two houses which were transformed into the Hôtel Regina. Here the modern style had been adopted. The decorative motive is painted on the walls and extends in the form of bowers of leaves. These are certainly not sufficiently stylized to appear in this way upon a cornice; they have remained too vegetable and have not yet awakened to decorative life. We must also make some reservations as to the door frames, the glazed-earth tones of which are crude. The colored-glass roof of this dining-room is by Galland; but it seems to us to be one of the least successful of his productions. Much better work of his has been seen elsewhere.

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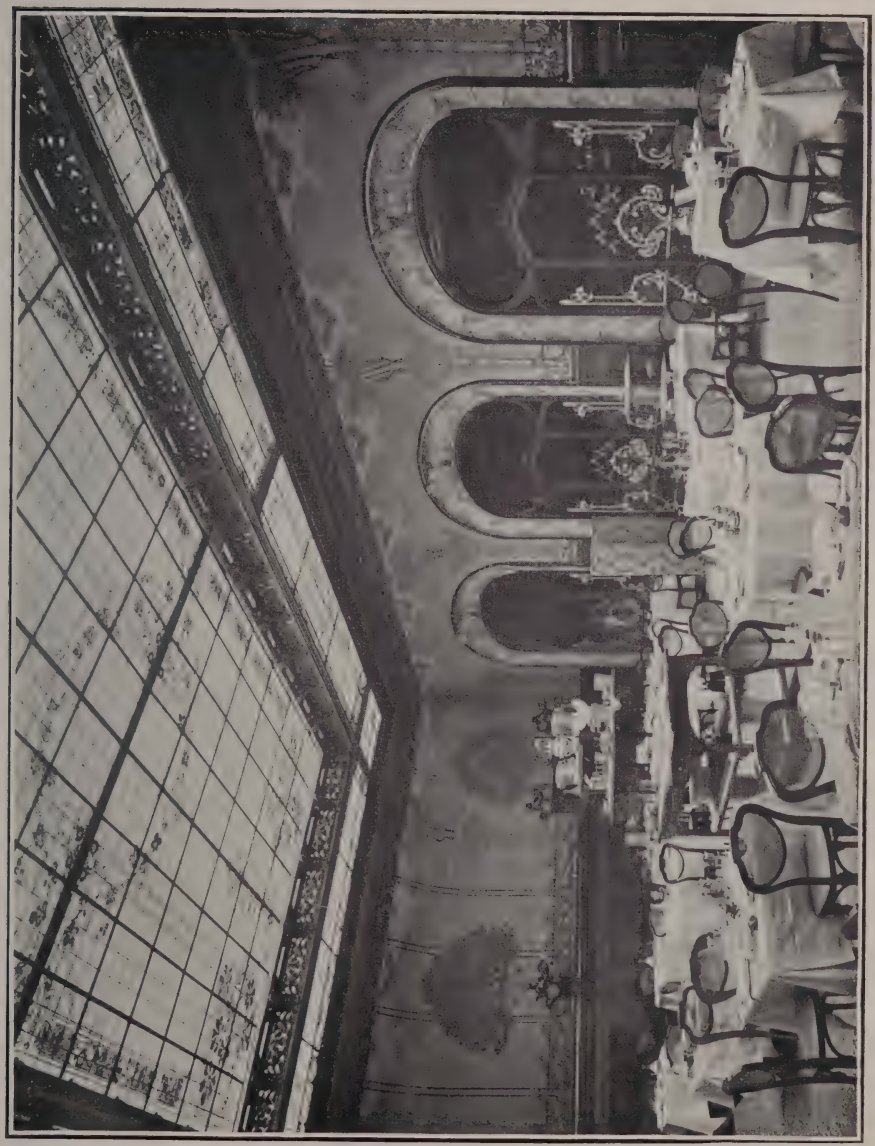


FIG. 5.—THE DINING ROOM, HOTEL REGINA.



FIG. 6.—ROOM IN THE ESTABLISHMENT OF A LADIES' TAILOR, PLACE VENDOME, PARIS.
Architect, M. Sibien.



FIG. 7.—STAIRWAY LEADING TO THE SHOWROOMS IN THE ESTABLISHMENT OF A LADIES' TAILOR, PLACE VENDOME, PARIS, 18th CENTURY.



FIG. 8.—STAIR-HEAD IN THE SAME ESTABLISHMENT, PLACE VENDÔME, PARIS.

Decorations by M. Sibien.

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The same architect has had the task of arranging a portion of the former office of the Military Governor of Paris, situated in the Place Vendôme, which is now the business premises of a leading ladies' tailor. Here, more than anywhere else, modern style was out of the question. In such a pleasant, old-world spot as the Place Vendôme there was no room for anything but light, graceful adaptations of ancient style. M. Sibien has planned these with the same good taste to which the Hôtel Regina bears witness. We give as an example the delicious Louis XV. salon shown in Fig. 6. He has kept to his favorite tone—white upon white. One could wish that a Boucher or a Fragonard had painted the pictures that are over the doors, but that sort of thing is not so easily reconstituted as are friezes, foliage and arabesques.

As we are speaking of the Place Vendôme, we cannot forgo the pleasure of giving the readers of the "Architectural Record" an illustration of the staircase leading to the showrooms of this *couturier* (Fig. 7). Of course it is ancient. Where in modern houses could we find the same ample and majestic curve that we see in these stairs, or the same broad, easy steps? It is really a fine specimen of staircase of an eighteenth century mansion, with a forged-iron balustrade that is at once solid and elegant. In the cramped houses of the present day what is the staircase becoming? The elevator has dealt it a mortal blow. In the steel-framed houses of the United States it is no longer anything more than a formality insisted upon by the Fire Department, and in private houses is nearly always built of wood. Few landlords would be so generous as to permit of the erection of a staircase like the one here shown. Let us salute its photograph, for it is becoming a thing of the past, like the hand-carved waiscoting which once embellished these apartments.

Our last figure (8) is that of the stair-head, with the decoration that has been applied by M. Sibien. We do not quite see the object of the double false panel and its ornamentation, nor of the decorated ceiling. Probably the landlord did not consider that the proverb, "Beauty unadorned adorned the most," was applicable here. Very few persons are content with quiet, sober things; but there is a saying of ours that "le mieux est l'ennemi du bien," and we think it is exemplified in the present instance.

Jean Schopfer.



BACHELOR APARTMENT HOUSE.

No. 22 East 31st Street, New York City.

Israels & Harder, Architects.

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Note.—A typical non-fireproof bachelor apartment house erected on a single lot.

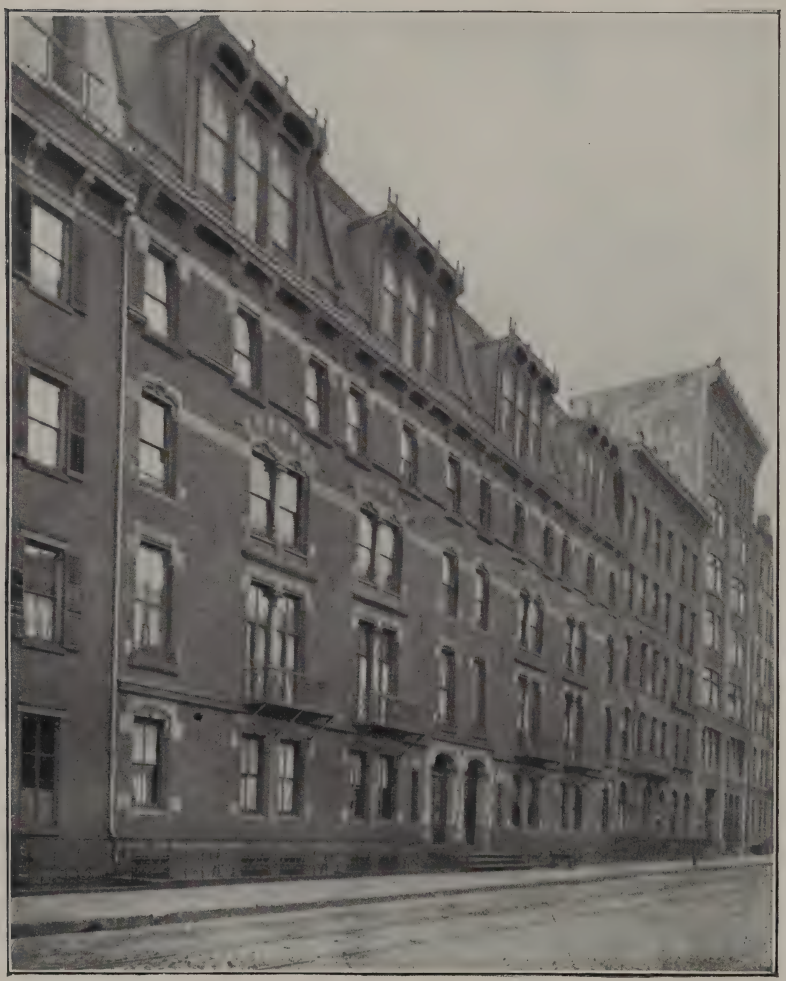
NEW YORK APARTMENT HOUSES.

TO the New Yorker of thirty years ago the apartment house was an exotic. Every good Knickerbocker, with even the most modest pretensions, considered it his duty to house his family within four wells wherein he would be the sole lord and master; and the highest reach of his ambition was a "brownstone front."

Since that period New York has grown from a provincial city to the position of the metropolis of the western world; but although the population of the city has increased by leaps and bounds, its topography allowed for growth in but one direction, and the inconvenience due to insufficient methods of transit aggravated the difficulty and compelled a large portion of the population to make their homes in inaccessible localities. To meet these conditions the apartment house was introduced, and with its advent an almost unlimited area (in a vertical direction at least) was made available for dwellings in desirable neighborhoods. To-day New York is a city of apartments.

As "they order these matters better in France," it was but natural that the designer of the first apartment house should turn to Paris for his model, and it therefore fell to the lot of the late Richard M. Hunt, whose French training (rare at that time) made him familiar with the problem, to construct the "Stuyvesant Apartments" on the south side of Eighteenth street, between Third avenue and Irving place, in 1869.

For some years these houses stood in lonely grandeur as the sole example in the city of dwellings of the better class designed for the use of a number of families under a single roof, and that they were looked upon at that time as something thoroughly foreign to our civilization is indicated by the fact that they were popularly known as "The French Flats" for an extended period. The success of this venture and the increasing demands of an ever-pressing population, soon caused alterations of many old dwellings into apartments, and it was in 1871 that the second important venture was essayed by the erection of what was then known as the "Stephens Apartment House," since altered into the "Victoria Hotel." This was also designed by Mr. Hunt, and being more ambitious in scope and, appealing to a wealthier class of tenants, it was supposed to embody all of the good features of its French prototypes plus the American improvements. In the years following these pioneer ventures, Mr. H. J. Hardenberg constructed the "Dakota" for the Clark Estate at Seventy-second street and Central Park West, and the erection of the "Chelsea" in Twenty-third street between Seventh and Eighth avenues, and the "Navarro



STUYVESANT APARTMENT HOUSE.

No. 142 East 18th Street, New York City.
Richard M. Hunt, Architect.

Note.—The first apartment house erected in New York City.



-TYPICAL-FLOOR-PLAN-
STUYVESANT APARTMENT BUILDING
142 EAST 18th ST.
R.M. HUNT-ARCHITECT.

Apartments" at Fifty-eighth and Fifty-ninth streets and Seventh avenue, designed by the firm of Hubert, Pirsson & Hoddick, further astonished New Yorkers by their enormous size. Although it is to these large and important operations to which one must look as indicative of the development of the New York apartment, they can by no means be taken as a fair example of types that were possible to the early designers of this class of New York dwellings. During this period of development, the average architect was compelled to wrestle with the same problem upon ordinary city lots of twenty-five by one hundred feet or multiples of the same size, and all of the elements which had entered not only into the problem of these larger houses, but also into the tenement house problem as well, were even more exacting in these dwellings; which, while appealing to a better class of tenants than the average "tenement" (using the word in its general and not its legal sense) were at the same time compelled to provide superior accommodations. Of these early ventures the less said the better. The excellent conditions for concentrated light possible in the larger operations were practically prohibited on the smaller area, and although the types of many of the larger houses were such that they may still be looked upon as generally successful examples, the ordinary types upon inside lots were poorly lighted, inconvenient and unsatisfactory; and these conditions were exaggerated by the fact that fully ninety per cent. of the apartments were erected by speculators, whose principal desire was to show as large a rentable area as possible to their prospective buyers, irrespective of the disposition of the space.

In fact, it is only within the last few years that the building public has begun to realize that a successful apartment is impossible on a single New York lot, unless the conditions existing upon abutting properties are such as to insure a reasonable certainty of permanent light and air.

In considering the basic reasons for the various types of apartments, one should always bear in mind that the law has consistently failed to make any distinction between a "tenement" and the class of buildings generally referred to as "apartments;" and it therefore follows that a study of the changes which have taken place in the types of apartments must be accompanied by a parallel application of the legal status of the tenement under the various building laws and supplementary statutes which have been enacted from time to time, mainly to meet the demands of the "tenement house problem."

This may seem at first blush somewhat unjust, considering the different conditions under which "tenements" are erected; but, after all, the "tenement," in its generally accepted sense, is simply a city

habitation for housing the greatest number of people at a minimum rental, and an "apartment" house a better equipped tenement, with greater advantages and conveniences built in a neighborhood commanding larger rentals. The object which each strives for is identical; they differ only in detail.

The conditions in the neighborhood, which make the apartment possible are not necessarily permanent, and degeneration from the better to the poorer type of house is always possible with the ever-changing conditions in a large city.

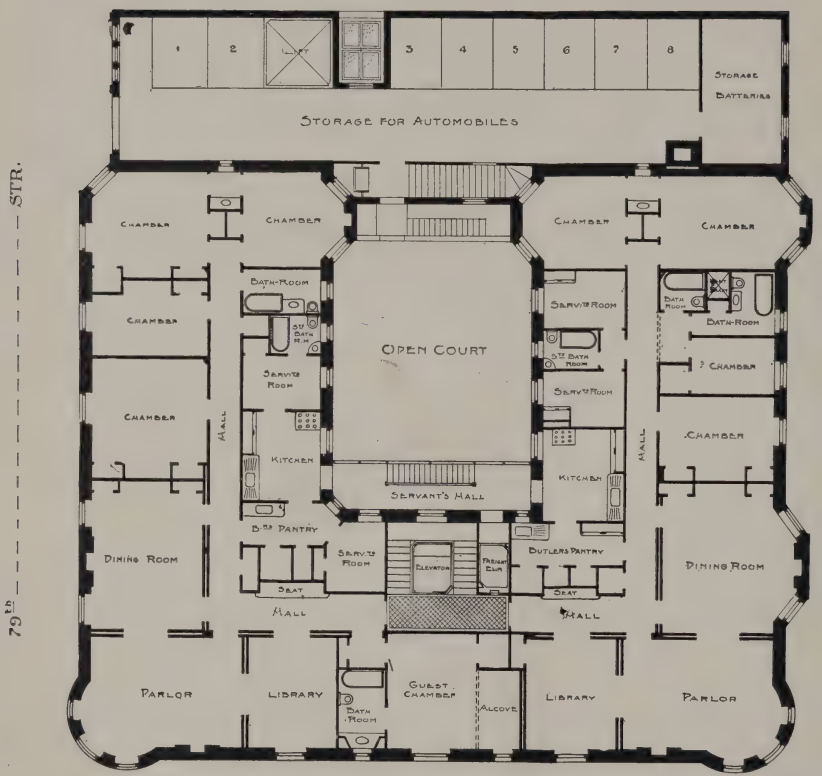
With the introduction of the present "Building Code," however, an inconsistency did arise in the application of this principle which is undoubtedly causing unnecessary hardship in some minor particulars to designers of the newest types of apartments. The same causes which originally called the apartment house into being have by increasing pressure, coupled with the troubles of housekeeping in New York due to the "servant girl question," caused the construction of bachelor or non-housekeeping apartments, particularly in the heart of the city; and although a large and increasing number of these houses were being erected at the time of the adoption to the present code in 1899, the Code Commissioners did not recognize their existence and left it to the Commissioner of Buildings to give them a legal status. This particular situation may be best shown by reference to the definition of an apartment house in Section 9 of the Code, which states that "An apartment house shall be taken to mean and include a home or residence for three or more families, living independently of each other, and in which every such family or household shall have provided for it a kitchen, set bath tub and water closet, separate and apart from each other."

A bachelor or non-housekeeping apartment certainly does not come under this definition, and a hotel according to the following section must have "a general public dining room or café or both."

In the average house of this character meals are served only in the tenants' rooms, and as no dining room is provided, it cannot legally be classed as a hotel.

The Building Department, however, has ruled that such houses properly come under the head of apartments, and although of the two possible rulings this was by far the most liberal, it compels the designers of bachelor apartments to comply with certain tenement restrictions as to halls and stairs clearly framed with reference to the mixed population inhabiting a building which is a tenement in fact as well as in name.

Not only has the question of planning of apartments been mainly influenced by the legal status of these structures, but the constructive methods and heights have also been in a great measure similarly dictated by the statutes in force during the various periods

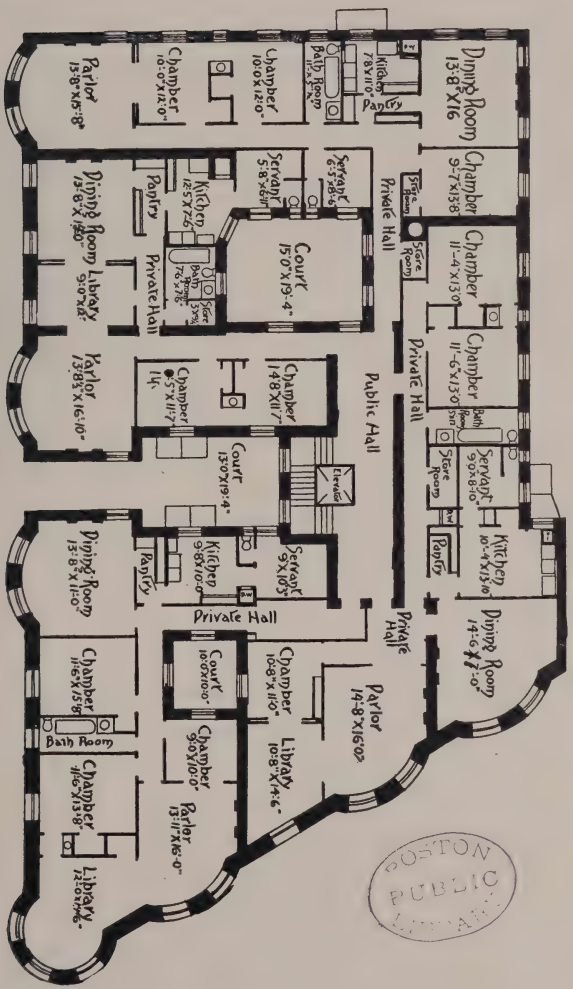


FLOOR PLAN OF AN APARTMENT HOUSE.

Northwest corner West End Avenue and 79th Street, New York City.

Wm. B. Franke, Architect.

since the introduction of these houses in New York. A good rent-paying property, being naturally one of the main considerations to be striven for, apartments have in their construction naturally followed the lines of the least financial resistance, and while the introduction of the electric elevators and the extension of the public service of current has made the upper floors the most lucrative portion of the house, the limit of height for non-fireproof construction has acted as a counter-irritant, and under the Code as now in force the average apartment will continue to be constructed seven stories in height, with the two lower floors fireproof. In fact, to one familiar with the history of the building laws in New York, the period of construction of the average house may often be told with reasonable accuracy by even a casual glance at the exterior, and to-day the comparative economy with which the prevailing type of a seven-story house may be erected within the limit of seventy-five feet in height is causing many radical improve-



FLOOR PLAN OF THE EL NIDO.

116th Street and Seventh Avenue, New York City.

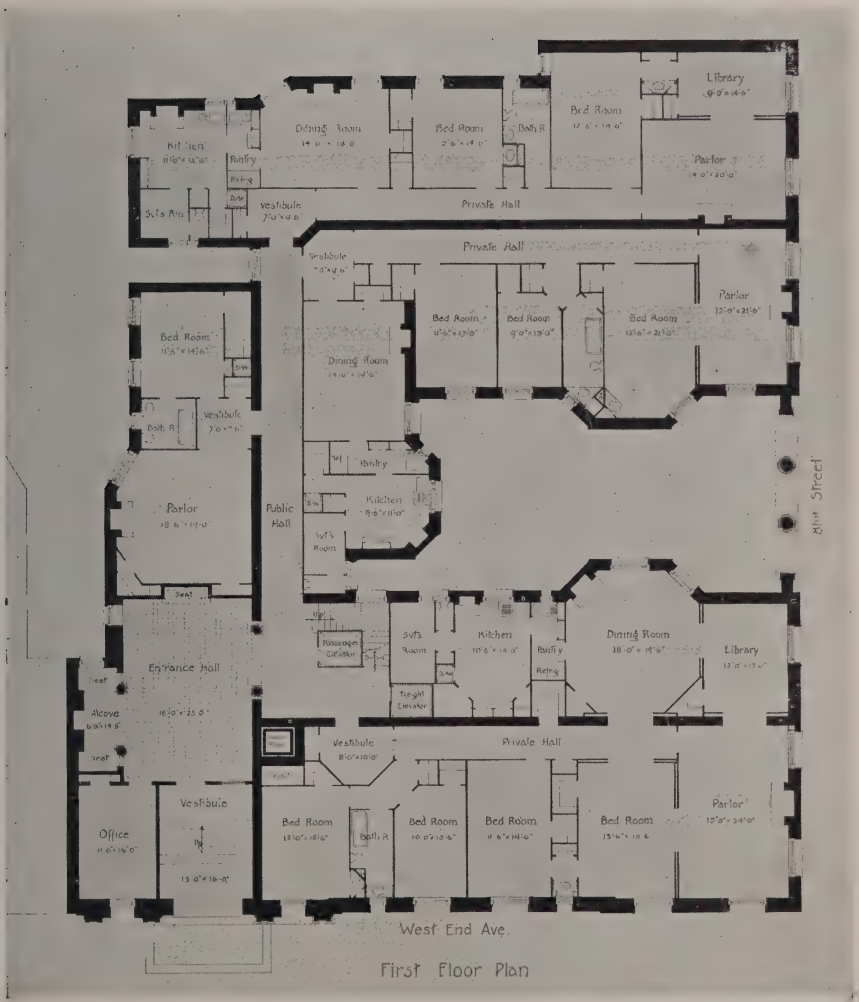


APARTMENT HOUSE.

Northeast corner 81st Street and West End Avenue, New York City.

Little & O'Connor, Architects.

Note.—A representative contemporary apartment house with a court opening on the street



FLOOR PLAN OF APARTMENT HOUSE.

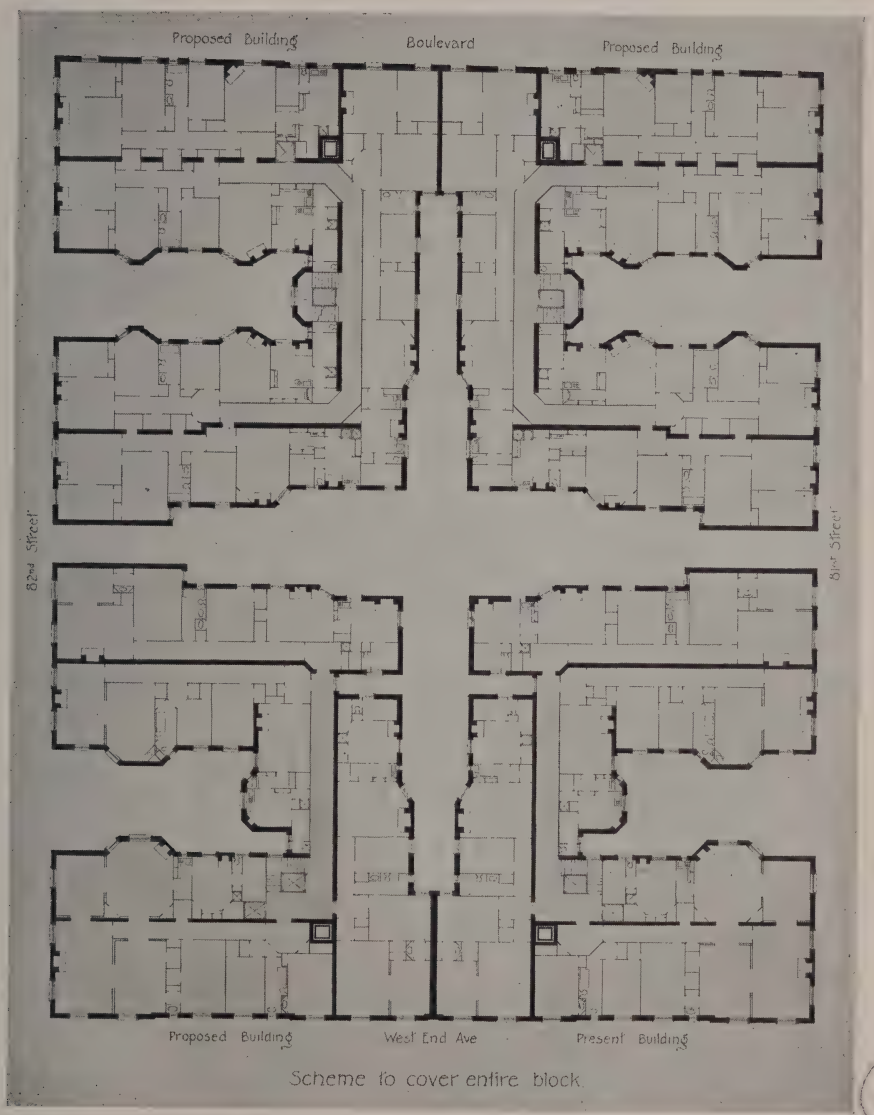
Northeast corner 81st Street and West End Avenue, New York City.

Little & O'Connor, Architects.

ments, together with the introduction of elevator service and many other conveniences in neighborhoods which but a few years ago were considered far too humble for luxuries of this character. The present law limits the height of non-fireproof houses to eighty-five feet, and allows the construction of a twelve-story fireproof structure to the height of one hundred and fifty feet upon a street eighty feet wide and a ten-story fireproof structure to the height of one hundred and twenty-five feet on a sixty foot street; while houses exceeding one hundred feet in height must be at least forty feet in width. Notwithstanding that the limit of height for non-fireproof construction is eighty-five feet, it is not found economical to carry the average seven-story house beyond seventy-five feet in height for the reason that a greater vertical measurement compels the thickening of all the walls, and the consequent loss of rentable area coupled with additional cost.

The successful planning of an apartment house in New York, therefore, involves first of all a thorough knowledge of the complicated statutes and regulations governing their construction, and the disposition of the minimum free air space required under the law in such a manner as to give the ultimate amount of light with the maximum rentable area. For this purpose a careful study of the environment is absolutely essential, not only in its bearing upon the structure at the time of its erection, but also with particular reference to its permanency, especially in streets where the character of the neighborhood is undergoing alteration.

The disposition of this free air space is again governed by the class of apartments which are being planned, and it will be found absolutely impossible to establish any general rule which would apply only to the average of symmetrical lots, without finding that these rules would vary radically even for lots of the same shape and area when applied to large or small apartments. On account of the necessity of grouping the entrances to the various suites of rooms around the space devoted to the public halls and elevator, economy of construction and service as well as the maximum use of floor space for the purpose of rentable area, demand that this public space be as small as the necessities of the particular case will permit, as far as is consistent with the efficient handling of the traffic; and a large central court, so desirable for purposes of light and air, generally has as its complement the long and objectionable public halls, which becomes necessary in order to reach the apartments on the opposite side of the court. This feature may be obviated, it is true, by the use of more than one stairway, but by so doing the cost of both construction and maintenance is greatly increased in structures not legally requiring it.



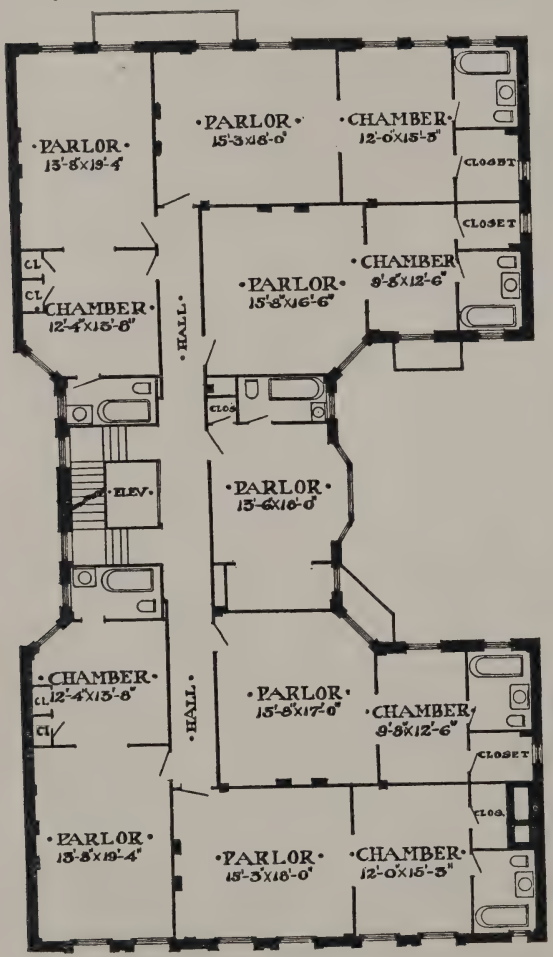
SCHEME FOR AN APARTMENT HOUSE TO COVER THE ENTIRE BLOCK.

Between West End Avenue and Broadway, 81st and 82d Streets.

Little & O'Connor, Architects.

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A concentration of open court space upon one side of the building with the court enclosed on but three sides will therefore generally be found the most desirable arrangement on all lots fifty feet wide or over as giving the maximum amount of concentration with a minimum area devoted to public halls.



THE IROQUOIS.

53 West 44th Street, New York City.

H. B. Mulliken, Architect.

In this and similar cases a small court will undoubtedly be found necessary on the opposite side; but as in the plan of the Iroquois Apartment, shown in the illustrations, it may be used to light and ventilate only a small number of rooms, while the larger number of important apartments are well provided for in the more important court. Another advantage from the use of larger courts, and particularly those opening upon the street, is that they may be treated architecturally and in harmony with the façade, and by giving these courts an outlet in the direction of the street, the number of inside rooms is materially decreased and the owner's income increased accordingly.

In lots less than forty feet in width it will generally be found that the large square or centre court is impracticable, and it is then that the architect frequently finds that, being compelled to provide light on both sides upon a long narrow lot, he is forced to use similarly shaped courts, which unfortunately depend mainly upon the



THE CHERBOURG.

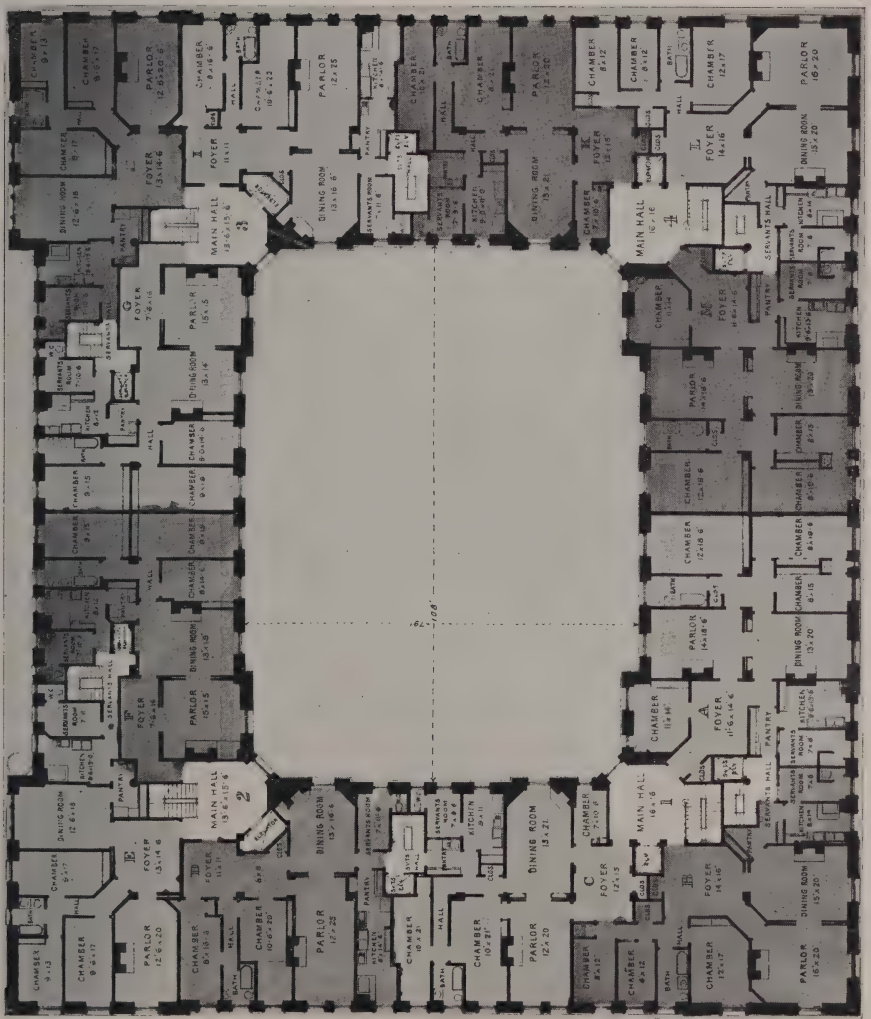
Central Park West and 92d Street, New York City. Neville & Bagge, Architects.



GRAHAM COURT.

Seventh Avenue, 116th to 117th Street, New York City. Clinton & Russell, Architects.

Note.—One of the largest apartment houses in New York. Built around an interior court. (See page 491.)



PLAN OF GRAHAM COURT.
(See page 490.)

conditions obtaining upon adjoining lots for their effectiveness. Even this might be avoided to some extent by the introduction of a side street court, if the objection could be met that by so placing the court, certain apartments are prevented from securing windows directly upon the street, and are compelled to have an outlook upon the blank and unfinished wall of the neighboring property.

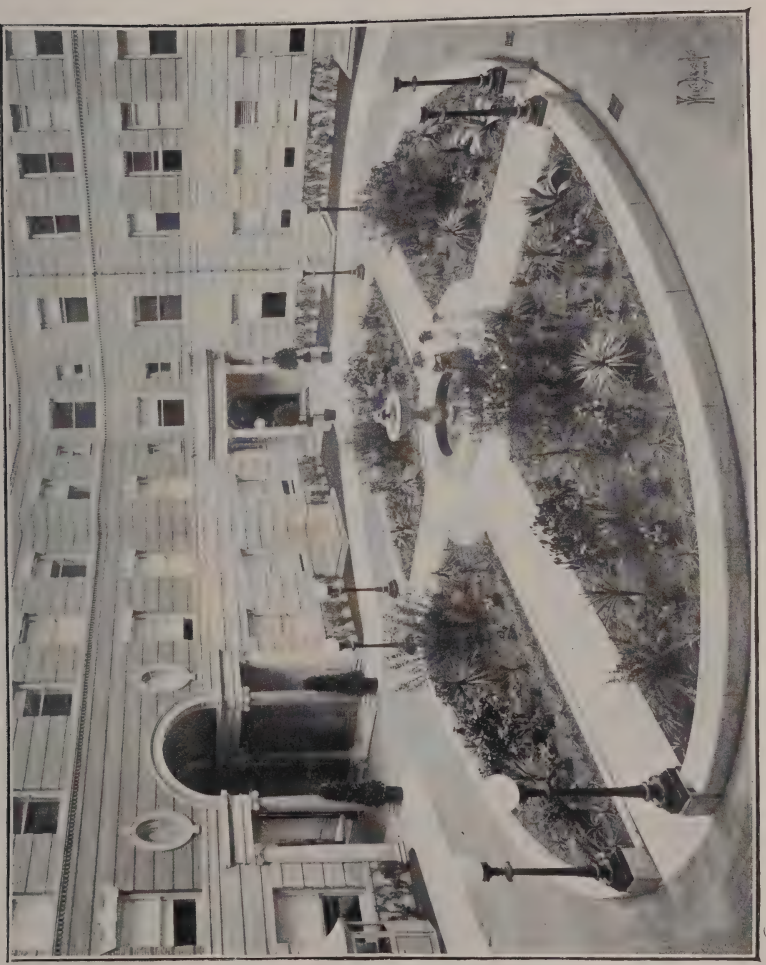
On lots smaller than forty feet and more than twenty-five, economy of construction would, if possible, dictate the disposition of the courts in such a way as to eliminate most effectively the centre girder, whereas the only hope for the twenty-five foot house, except in locations where light from abutting properties may be permanently depended upon, is in the opening of street and yard courts enclosed on but three sides, which, notwithstanding their objectionable features, positively insure good light and air.

The problem presented on corner lots is naturally very much simpler of solution, and even upon a single ordinary lot of the average width a reasonably satisfactory apartment plan does not present any insurmountable difficulties.

A careful study of the requirements of the class of tenants making their homes in the vicinity where the apartment is to be erected is also absolutely essential to the successful plan, and this knowledge frequently involves an amount of exact data in the real estate field, which may generally be best obtained from some real estate agent doing business in the neighborhood.

An apartment may fulfil every possible architectural requirement and be a failure. The truly successful house must meet both artistic and business demands, and when deficient in the latter it is even more a failure than when lacking in the former. The architect must not only strive to meet successfully the demands of the people to whom he appeals, but he must also meet successfully the requirements of his own neighborhood as well. And he must do all this in both an economical and artistic manner. Some of these business shortcomings are becoming particularly noticeable in the present French tendency of our architecture, not only in our exterior design but in our planning as well. Plans suited to the life of continental Europe may be absolutely out of keeping with the methods of life obtaining in an American city, while the many conveniences with which an American apartment is equipped and which are generally lacking in their European prototypes, considered together with the digit of New York lots, have dictated new arrangements, to which the general plan of the Parisian apartment is thoroughly unsuited. An example of this error may be seen in a number of the early apartments which were provided with an office for a "concierge." This functionary was, however, soon dispensed with, as the average

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GRAHAM COURT.
View of Interior Court.



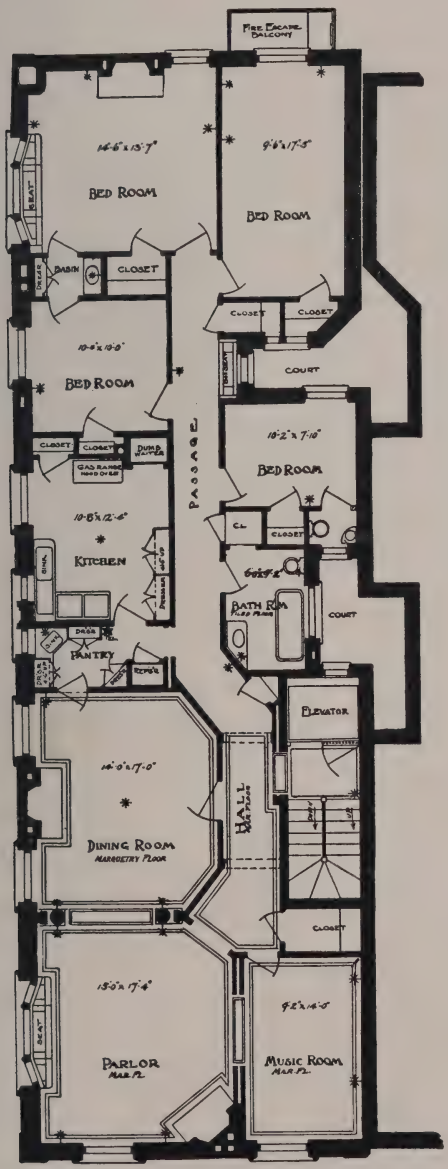
APARTMENT HOUSE.

No. 78 Irving Place, New York City. Israels & Harder, Architects.

Note.—A non-fireproof apartment house built on a corner lot.

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American looked upon her as a person whose particular business it was to interfere in his private affairs and to look for tips. He protested and the concierge was eliminated. The apartment house, like all other architectural developments, must meet the requirements of the civilization to which it appeals—it cannot lead it.



FLOOR PLAN OF NO. 78 IRVING PLACE.
(See page 494.)

Having become familiar with the habits and desires of the prospective tenant, the architect of the successful apartment will find it necessary to meet these requirements by the most scrupulous attention to details of the most minute character. The usual disposition of the spaces upon axial lines necessary to obtain any plan which is architecturally satisfactory, is not sufficient for the proper arrangement of the limited areas at his disposal. The wall spaces in particular are limited, and the door and window openings and even the position of the lighting must be so disposed as to allow for the proper placing of the necessary and usual furniture. A room may have quite sufficient area for habitable purposes, with its openings and other accessories so arranged that the proper placing of furniture is impossible, while even a small room properly arranged with sufficient concentrated wall space may be used to advantage, when a much larger area would be valueless, if not planned with a proper regard for the contents of the room. The disposition of the light-

ing must also be arranged with a similar reference to the movable fixtures, and such outlets should not be placed centrally in wall spaces which might be otherwise used. Even the swing of doors, the placing of the telephone and bells, should be carefully studied with the same object in view, and in bedrooms in particular a concentration of wall space should always be obtained, preferably in the portion of the room obtaining the poorest light where a bed may be placed parallel with the wall. These details may seem trivial to the average reader who has not studied the problem, but the importance of even inches in the apartment house may be inferred from the general tendency now in vogue towards the omission of furring and the substitution of various waterproof preparations on the walls, mainly on account of the two inches gained thereby. The disposition of the rooms themselves in relation to one another and to the entrance to the apartment from the public hall is naturally subject to considerable variation, and this question is also dependent upon the class of apartment being considered. In all classes, however, it is desirable to arrange the drawing room or parlor in such a position that it shall be easy of access from the main entrance leading to the public hall, and in the larger apartments where the long private hall is unavoidable, if the drawing room be so arranged, the visitors may be ushered directly into this room, without disturbing the privacy of the family by being compelled to pass the sleeping apartments.

For similar reasons it is desirable that the music room and library, if either or both be provided, and the dining room as well, should adjoin the drawing room, the butler's pantry being placed between the dining room and the kitchen and the door from this pantry to the public hall forming the only means of exit for the servants. In this manner the kitchen offices are isolated in as complete a manner as possible, an object which is particularly desirable and which is easily obtained, if, as is frequently the case in the average apartment, but one servant's room is provided, communicating with the hall only through the kitchen. This arrangement groups the rooms to which strangers might have access in the front of the apartment, and by so doing not only enables the host to use his three most important rooms "en suite" for the purpose of social functions, but also places the bedrooms in the rear in the position of the greatest seclusion. This grouping is frequently made undesirable, however, by the position of the light courts upon which the dining room, which is usually the room once removed from the front, is apt to be placed; but if it can possibly be so arranged, it is immeasurably superior to the system which places the dining room to the rear of the apartment, causing guests to traverse a long and comparatively narrow hall on their way to



APARTMENT HOUSE.

Madison Avenue, southeast corner of 66th Street, New York City.
Louis Korn, Architect.

the table. This objection can also be even more strongly made against the system which places the main entrance near the rear of the apartment, even though a small reception room be situated close by for the casual visitor.

It will be readily recognized that these general criticisms apply mainly to the housekeeping apartment of average size; for in treating larger and more ambitious spaces it is frequently possible to totally eliminate the long private hall and to group the main portions of the apartment around a well lighted foyer. Under these conditions, rear servants' stairs as well as an elevator for the use of the servants, and general servants' quarters in another portion of the house enable the designer to isolate the kitchen offices without causing them to be placed at too great a distance from the dining room.

In the small non-housekeeping or so-called bachelor apartment the problem is much simpler on account of the availability of the



APARTMENT HOUSE.

(See page 499.)

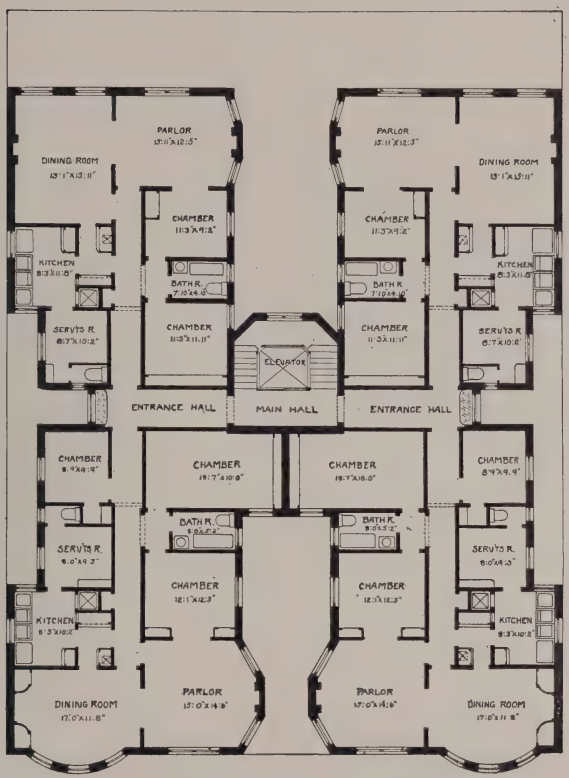
55th Street, north side, 100 feet west of Seventh Avenue, New York

G. A. Schellenger, Architect.

space for rooms which in the housekeeping apartment must be placed in the halls, and as it is frequently only necessary to enter the parlor from the public hall, the adjoining rooms may in their turn be grouped around the parlor, although if but one bathroom and two bedrooms be provided it is absolutely essential that access be had to the bath from each room without passing through the other.

Economy of planning naturally demands as large a concentration of plumbing apparatus as the design will reasonably allow, although the total cost of the plumbing in relation to that of the entire structure is of such comparatively small importance that considerable extra expenditure may be safely made in this direction, if by so doing the convenience of the plan is enhanced.

An interesting experiment was tried some years ago in an apartment constructed at the northeast corner of Madison avenue and



FLOOR PLAN OF APARTMENT HOUSE.

(See page 498.)

55th Street, north side, 100 feet west of Seventh Avenue, New York City.

Thirtieth street of making one apartment occupy space on two floors with the chambers on the upper story. That the experiment has not been repeated is presumptive evidence that it was not considered successful, as it neutralized one of the principal advantages claimed by the apartment dweller, namely, economy in housekeeping arrangements and service due to dwelling entirely upon one level.

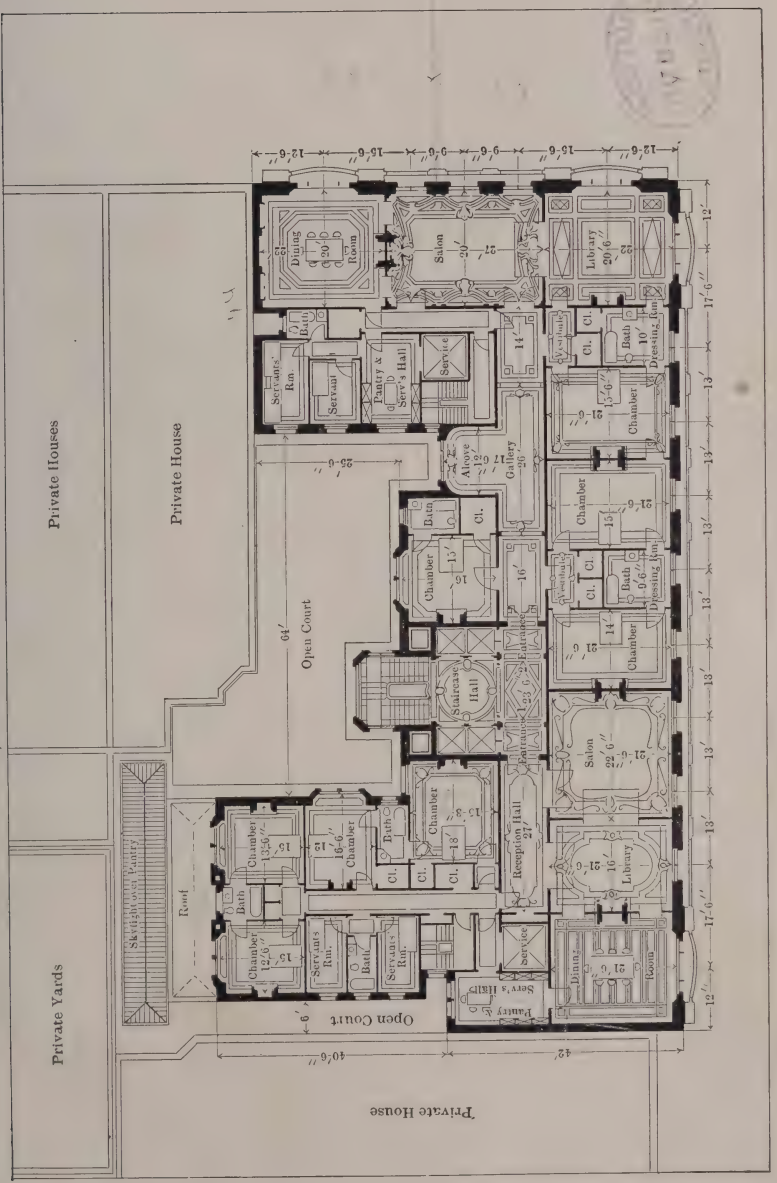
Ample closet room is an important detail to be considered in the well planned apartment, and, proportionally speaking, this closet room should be furnished in an inverse ratio to the size of the apartment, as people living in but few rooms have comparatively a larger quantity of personal effects for which they must find storage space. The apartments constructed a few years ago were particularly deficient in this respect, but the more modern house seems to have met this difficulty more thoroughly.

Other tendencies as well as those which have been mentioned, and which are in accord with the spirit of the age, namely, the



THE NEW ASTOR APARTMENT HOUSE.
Fifth Avenue and 55th Street, New York City. Livingston & Trowbridge, Architects.

Note.—Type of an apartment house designed for wealthy tenants.



FLOOR PLAN OF ASTOR HOTEL.
(See page 500.)

tendency towards coöperative living, have also had an influence upon the desire of our population to dwell in apartments instead of in single houses. The modern and up-to-date apartment offers to its tenants a measure of luxury and convenience totally beyond the reach of the man of average income living under his own "vine and



APARTMENT HOUSE.
Broadway, northeast corner of 71st Street, New York City.

Janes & Leo, Architects.

fig tree." Here he has provided for him telephones, heat, hot water service, refrigeration, gas for fuel, storage for his bicycle, filtering plants, indoor laundry and drying apparatus, and frequently a roof garden, all of which tend towards the most economical and convenient living at the lowest cost. Coal and ice bills are to him things unknown, and he may read of combinations on the part of "coal barons" and a "short ice crop" with the utmost

complacency, while in the non-housekeeping apartments, so many of which are now being erected, he is free from the continual annoyance of securing his own servants, and even in the house where no dining room is provided, his meals may be served to him in the privacy of his own apartments without the annoyance of housekeeping—while the superintendent acts as valet for a small fee and cares for his wardrobe.

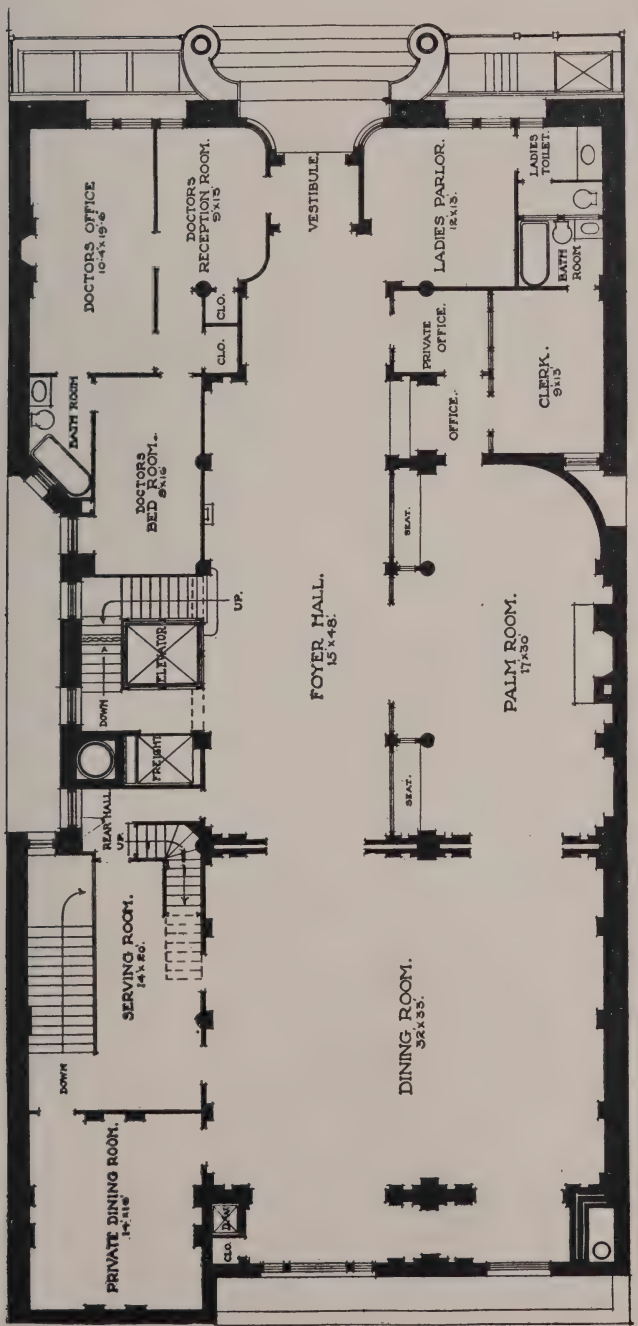
The method of administration adopted in houses of this latter class has also tended to relieve this kind of apartments from the terror of the earlier types, namely, the janitor, as the superintendent is from the nature of his work a man of very different class from his progenitor, and instead of being simply a head servant, he occupies an executive position, paying all the wages of the attendants out of his own salary, and is therefore directly responsible for the management of the house, the service of meals being his private perquisite.

Architecturally considered, the New York apartment has progressed as steadily in design as it has in arrangements based upon matters of pure convenience. With the exception of the few prominent examples heretofore mentioned, the average apartment of the earlier type failed lamentably in both particulars; and while being underdone from a sanitary standpoint, were terribly overdone architecturally. One speculative builder of unpleasant memory, whose operations extended for many years from one end of the West Side to the other, amused himself for a long period by constructing blocks of houses which he had designed around the bankrupt stock of a terra cotta concern which he had purchased at bargain prices. From the monuments of his thrift which he has left as his legacy to the present generation, it is evident that his principal concern was to use his terra cotta irrespective of the position for which the pieces were originally intended. Capitals are frequently used as bases and vice versa, and the results may be better imagined than described. It was, however, from such beginnings that the modern apartment has developed to its present status of at least rational design, and the tendency to over decoration seems to have been successfully overcome even among the speculators who are still responsible for the greater number of apartments, particularly upon the upper West Side. For this improvement a considerable amount of credit is due to the firm of Neville & Bagge, who have been responsible for a large amount of work in the neighborhoods where the apartment flourishes, and although it may be impossible to point to any work of this firm which is superlatively excellent, they have succeeded by their numerous examples in raising the architectural standard of an entire neighborhood from one of debasement to at least of respectability.



HOTEL TOURAINE.

39th Street, North Side, Near 5th Avenue. Charles I. Berg, Architect.

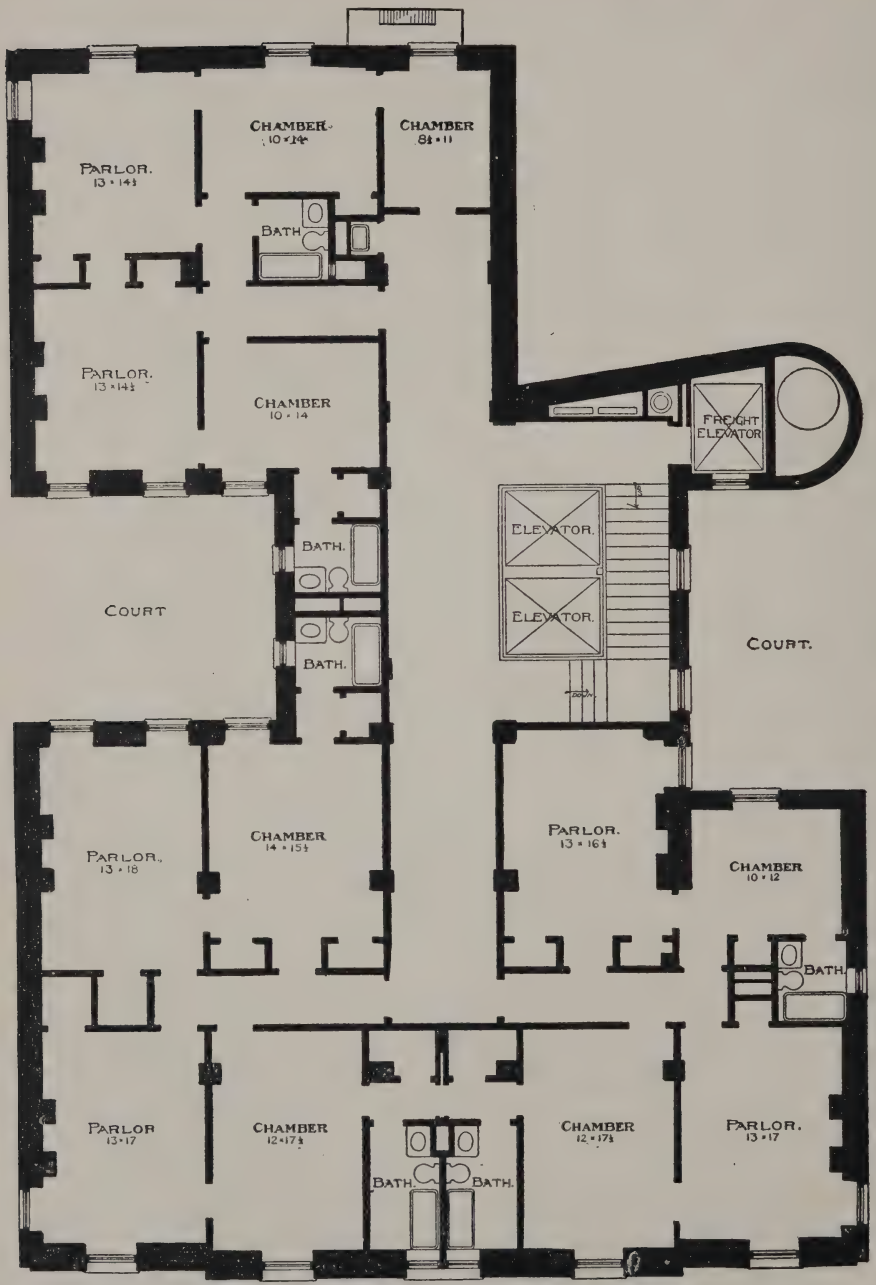


CHAS. I. BERG.
ARCHITECT.

·FIRST·FLOOR·PLAN·

SCALE.

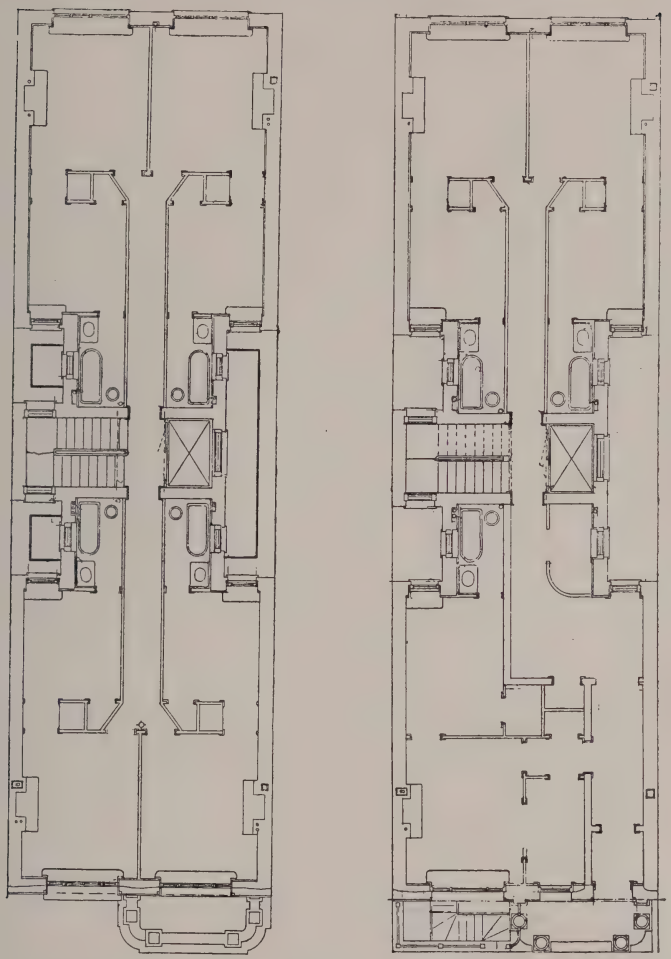
FIRST FLOOR PLAN, HOTEL TOURAINE.



FLOOR PLAN OF THE MARTINIQUE.

West 33d Street, New York City. H. J. Hardenbergh, Architect.

Note.—A typical contemporary apartment-hotel.



FLOOR PLAN OF THE CENTURY, A BACHELOR APARTMENT HOUSE AT 119 W. 45TH ST.

It is but natural that the same tendencies which have marked what has been properly termed elevator architecture in other classes of buildings, should be similarly present in the most successful apartment architecture, and the designs generally of the better class are therefore stamped by a general similarity of treatment best suited to the excessive heights which most of them attain, namely, a strongly marked stylobate generally two stories in height and treated in heavily coursed stone crowned by a heavy string course or balcony, the façade from that point to the top being treated as a whole and having the crowning story marked by a decorated treatment surmounted by a bold cornice, while a tendency towards wider but concentrated openings and more liberal

treatment of the piers tends to considerable more dignity than was the case in the restless fenestration so characteristic of the earlier work.

The business requirements of the situation have demanded an exceedingly bold and decorative treatment of the doorway and the carrying of a considerable decorative quality into the first story hall and vestibule, while many of the newer and larger houses have on account of their large street courts enabled their designers to divide their building vertically and to obtain an exceedingly satisfactory entrance court in the centre of the building.

As in other fields of architectural effort, the influence of the Ecole des Beaux Arts has made itself felt strongly in the exterior design of these houses as well as in their planning, and in the new addition to the Hotel Renaissance at Forty-fourth street and Fifth avenue, by Howard & Cauldwell, a Parisian corner has been transported bodily to New York, and, on account of its juxtaposition to the more tranquil design of the older portion of the same building, by Mr. Clarence Luce, it boldly challenges a comparison of the two schools, and seems to invite the criticism that while the older building answers rationally and honestly the demands of the situation and expresses its purpose in a delightful and dignified manner, its newer neighbor, with its mansard roof and general appearance of unsuitableness, fails in a large measure to give the idea of dignity and repose which is so strong a characteristic of Mr. Luce's design.

One of the most important causes which originally called the apartment house into being, namely, the want of rapid transit, is soon to be removed by the opening of the underground road. Had the old Broadway Arcade been constructed as was originally intended some years ago, apartment houses might have remained an exotic to this day. But the relief comes too late—and in our busy city many New Yorkers who have tasted the sweets of apartment house life, with its freedom from many of the vexations of housekeeping, will never wish to return to the older method of living. In the opinion of many New Yorkers the coöperation involved obtains the ultimate amount of comfort and convenience with the minimum effort. It follows a distinct tendency of this age of concentrated effort. It eliminates the individual for the common good. It will stay as part and parcel of New York life for all time.

Charles H. Israels.



DIANA, BY PRIMATICCIO, GALLERY HENRY II., PALACE OF FONTAINEBLEAU.

MURAL PAINTING, AND A WORD TO ARCHITECTS.

WITHIN the past few years mural painting has played so important a part in the building projects of our architects, that it seems worth while to inform ourselves more fully regarding this tendency to ally painting with architecture. When I say ally painting with architecture, it is hastening matters—it did not at first achieve this, nor does it always, speaking strictly, accomplish this at present. It is what we hope it will eventually do. But while hoping for this, we trust, not too "far off divine event," it may be of interest to consider a little the nature of mural art, its demands upon the painter, its range and limitations.

With our advance in architecture and fine building, has come such a demand for this kind of embellishment that a group of mural painters has grown up amongst us. These men are working seriously, often with high ideals, for a public which does not always understand them or their efforts. This is not surprising, for they are employing a mode of artistic expression that, until recent years, there has been no call for here; although in the art history of the world it has occupied the minds and engaged the energies of some of the greatest masters. Correggio, at Parma; Angelo and Raphael at Rome; Veronese, Tintoretto, and lastly Tiepolo, at Venice, emblazoned palaces, adorned churches, and ornamented the houses of the great. France has long employed this hand-maiden to architecture, as witnesses the admirable and ingenious compositions that Primaticcio, imported by Francis I., has left on the walls and ceilings of the palace at Fontainebleau. We, too, imported Brumidi and other foreigners to do the Dome and Committee Rooms of the Capitol at Washington; but these works do not become any integral element of the structure, and stand rather as a concession to the demand for sumptuousness on the part of a vaguely aspiring public. The qualities required of the painter as a worker in mural art are not convincingly displayed in these attempts at decoration, and the works themselves are consequently no contribution of esthetic significance to the art we are discussing. Primaticcio did leave works of art at Fontainebleau as inspiring precedents. There is little or nothing to start us on the right road in these painted panels at Washington. Let us glance, then, at certain qualities demanded of the mural painter. It will help, perhaps, to clear up the situation and to create a public that will be more intelligently exacting in regard to what should stand for them as mural art. Too often, now, this public accepts that which is not decoration, that which does not ally itself with the architecture it is supposed to enhance—and, indeed, that which

often sins against those canons of art which should at all times control it. For only when so controlled does this art reach the distinction worthy to be called "fine." I believe, however, there is a world of inquiring thought to-day circling round this question of mural art, approaching it and retreating from it, as the lay mind seems to grasp or to lose hold of its significance. And, as we are in the way just now, having called up examples of Primaticcio and of Brumidi and his class, let us compare the methods of successful and less successful decorative effort. Why does Primaticcio accomplish the work intelligently, and Brumidi fail to do so? Is it not because the former adapts the material to his purpose, while Brumidi is not so sensitive to the limitations and requirements of the art he is employing? They each have chosen for their material the human figure; but one knows that it is to be used as an ornament, under certain conditions—the other has not so intelligently understood the conditions, and the human figure in his hands has not been subjected to the inevitable transformation that it must assume in order to become effective material to the decorator. Redundant life disporting itself in dome or panel of a certain order of architectural design is not acceptable to true decorative instinct. This, however, is too often the offense in decorative effort—Primaticcio is wise enough to know that perhaps no object in nature is so available to the purpose of ornamental invention as that same human figure rightly made use of. No forms in the whole domain of nature, that great storehouse from which all his material is drawn, are susceptible of more perfect adaptation to the needs of the artist in decorative design than those of the human figure. But, as in the case of all natural forms selected for this purpose, they must be so conventionalized that the mind receives them primarily as ornament. Thus treated, flowers, fruits, trees, animals, all products, indeed, of the natural world, and aspects of landscape even, may be impressed into the service of decorative art. To do this the artist must be so familiar with the natural and normal structure of visual things that he can mould these objects to his will by a process of elimination by which the things themselves, while preserving their character, do not retain too strongly their realistic aspect, which would be unsuited to the place they are to hold as ornament in conjunction with architecture. The painter must create a new world of conventionalized forms. He must sacrifice much that has appealed to him as possessing charm in his exhaustive studies from nature—he must exercise self-restraint, not indulge in too varied definition, must temper his color, and in fact, arbitrarily bend to his purpose the things he has chosen as a basis of his pattern or design. Now, in this case, it so happens that Primaticcio has elected to ornament by means of the human

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DIANA, BY PRIMATICCIO, GALLERY HENRY II., PALACE OF FONTAINEBLEAU.

figure great structural surfaces of a palace wall. Pendentives, lunettes, panels must receive painted decoration—the spaces filled by logical attitudes and postures possible to the physical structure of man. And what satisfactory spaces, what agreeableness of opposing quantities he has achieved! Slender throats and arms so turned as to oppose in beautiful contrast the more massive volume of trunk and head—all this is given with an ingenuity of line that is delightful. It is to this end, as do few other objects, the human figure lends itself—it is thus that thoughtful decoration truly decorates and mural painting becomes a field for exquisite artistic invention. The gentlemen of the Renaissance surely studied with a purpose in view, and I have quoted Primaticcio as an example, the fire of whose spirit it would perhaps be well for more decorators of to-day to emulate. And the mention, above, of the obligation of the mural painter to make use of all forms of the natural world, suggests that many modern decorators fail to give this matter due consideration and study.

M. Galland, that able, serious and also brilliant decorator, owed to his excellence in this kind of design, his commission for one of the panels of the Panthéon. M. de Chennevières, Directeur de Beaux-Arts, after selecting a number of the most distinguished painters to cover the walls of this chuch with work illustrating a kind of apotheosis of St. Denis, Ste. Geneviève, of Clovis, Charlmagne, St. Louis and Jeanne d'Arc, came naturally to see that the different methods of these different men were, as decoration, going to clash. As a make-shift, he though that some tapestry-like border designed by the respective painters, but harmonious in motive and color, would help bind together, in some degree, the otherwise conflicting color schemes and compositions. Strange to say, in this apparently simple work, there was not a single artist who could satisfactorily fill his idea, and he resorted to M. Galland for a design. This, Galland readily made, and M. de Chennevières told him that he had done what not one of the figure painters was capable of doing. "You forget," replied Galland, "that I, too, paint the figure." It resulted in Galland's being commissioned to fill the panel near the door by "The Preaching of St. Denis." And this brings us to speak of M. Puvis de Chavannes that modern prince of decorators—in his sphere. Is it not possible that the inevitable excellence of Puvis's work in this branch of painting, the exalted position he holds, and the unquestioned security of his reputation come largely from his thorough understanding of himself, and of his making no mistakes? For it must be quite true that there were kinds of decorative work which he would not undertake—perhaps certain spaces, disastrously lighted, which he would not risk his name to fill. I can even conceive there is to

be forms of architecture with which he might care to have nothing to do. This high-minded, strenuous, and (in the way of form) puritanical nature, who seemed to fear the seductions that lay in the lovely lines of the human body, and who by a method of drawing could eliminate and reduce to its simplest and most telling statement the splendor of the human form—this princely decorator was master—in the field he had chosen. And it was a noble field, for he not only wrought in a most legitimate method, but he used this means as a language to voice a lofty plane of thought, to give expression to a world of unworldly and high ideas. The very austerity of his mind seemed to demand this broad and simple treatment; and he forged, in the (to the artist) hot furnace of neglect and ridicule the bright, pure and perfectly tempered instrument of his art. His detractors lived to recognize it. Chavannes' aristocratic and distinguished temperament was really classic in its tinge. Large forms and simple outlines appealed to him, so that, for him, landscape itself stood in a kind of stately and traditional dignity that was naturally transported to his canvasses as fitting material in which to place figures as dignified and stately as the world he created to surround them. By thus changing the obvious and commonplace aspect of natural things, this necromancer called up a celestial and terrestrial vision that did not estrange the humblest observer, but rather expanded him, augmented his powers and made him at home amid the scenes of the "Enfance de Sainte Geneviève," or, in the noonday rest, entitled "Le Sommeil" of the Musée de Lille. He is, indeed, great, in matter as well as in manner. Still, do not let us become warped in our admiration and narrow in our enthusiasm. In this many-sided world, while we acknowledge genius in one direction, we should not close our eyes to high gifts in another. Do not permit the cult, for it has become that, of Puvis de Chavannes to blind us to excellences of another kind. "There is nothing like Puvis." "The master of all," and like expressions are and have been constantly heard. He is master in his range—which he knew, and to which he devoted himself.

But this is not all of decoration. There are other gamuts of color, other orders of architecture with which decoration may have to do, and have much to do. I recall, sometimes, Venetian panels with rolling clouds and sunlit Venuses—Venice enthroned as some sumptuous queen, damask-draped, which no intricate design in its golden woof could prevent the impetuous hand of Veronese from tracing in all its strength and brilliance; no, not though the panel was to become a part of the heavy and encrusted ceiling in the palace of the Doges. On the contrary, it was because it was to be so set and so surrounded that he would not stay his hand;

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SYMBOLIC DECORATIONS, BY PUVIS DE CHAVANNES, IN THE ROTUNDA OF THE SORBONNE IN PARIS.
PANEL TO THE LEFT.



SYMBOLIC DECORATIONS, BY PUVIS DE CHAVANNES, IN THE ROTUNDA OF THE SORBONNE IN PARIS.
CENTER PANEL.

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SYMBOLIC DECORATIONS, BY PUVIS DE CHAVANNES, IN THE ROTUNDA OF THE SORBONNE IN PARIS.
PANEL TO THE RIGHT.

and it remains to-day an example of successful decoration—of another kind from that of Primaticcio, from that of Puvis—but decoration, all the same. Talk to us not of "holes in the wall" which too strong treatment will produce—it can effect this only, when "out of place"—but so arbitrary and so narrow is this idea of obedience to the structural integrity of a side wall or ceiling that the public has become sceptical through half-knowledge. This bogey of "holes in the wall" seems a phantom that artists have called up with which to frighten themselves. It is not too strong treatment which makes the trouble—it is not so much need or lack of able painting, but rather need or lack of good judgment, right feeling, sensitiveness to the requirements of the case that causes disaster here. Reduced to a simple statement, it is perhaps a misapprehension of the nature of mural art; but the same failure attends many painters in other branches of their work. Pictures often jump out at you from their frames, and the artists are called realists, when there is no such thing as realism possible or desirable in the whole realm of painting. In mural work, one might say there is even less chance of the mind being offensively deceived or diverted through illegitimate employment of the painter's resources, and for this reason all painting is a compromise; the greatest pages of the painter's art stand for a concession to certain restrictions which control the use of pigments—the very nature of the material employed imposes these. Now, when this art is based upon the walls of a structure, the observer inspecting this work is conscious of the surrounding structural features—he knows the roof is solid, the walls firm, the columns strong; this is the result of experience and habit of thought. There is little to fear then if the panels that represent supporting walls, the pendentives and lunettes, that mean often the constructive integrity of the roof, be intelligently treated in strong or palish color, in more or less redundent modeling, that the mind will be unpleasantly disturbed by a sense of insufficient resistance. At the same time it is here that the decorator may distinguish himself, and as the Venetian with full and rich palette did not jeopardize the sense of strength in the ornate palaces of the Queen of the Adriatic, so Puvis and Primaticcio have never invalidated the structural features of the architecture of the Renaissance and other epochs when adorning buildings of those respective periods. What indeed is the whole profession of painting but a demand upon the artist that he yield to certain arbitrary exactions that his calling lays upon him? Does he place a landscape in a frame, a portrait or a marine view; let him see to it then that they stay there—they do not always do so. If then the decorator paint ceilings or walls, see to it that they remain such, although they blaze with color as the noonday, or pale in the twilight mono-

chrome of dusk. This may be done, has been done, will be done and no structure marred.

So different, however, is the practice of mural painting from all other, that with each differing feature or order of architecture the artist must modify his point of view, his sense of color and of form. There is a wide difference in sentiment in these two styles of decoration, between the Venetians and de Chavannes, but in this kaleidoscopic city of New York, we range from the Acropolis to the Trocadéro with perhaps too little compunction of spirit. The mural painter must be prepared for this; he must have all that treasure of synthetic form derived from his study of the natural world, and he must adapt this as successfully to the requirements of a particular problem as these painters have done before him. In addition to the maintenance of a correct and unobtrusive surface aspect, the other questions of the subject, composition, and a sense of line which will contribute to the impressiveness and distinction of the chamber decorated, must all come up and be met intelligently. And this leads me to mention that in this matter, even of surface fitness, that great monument in Paris, most propitiously begun in the interior decoration of M. de Chavannes, is a failure as a work of art, which is what a great building as a whole should stand for. The Panthéon which received an additional benediction, when, in 1876, the decorations of Puvis were uncovered, might have become this unique and distinguished object—a work of art—had this same painter been permitted to control all the pictured surfaces of this temple of religion and of fame. I can conceive of few, if of any more perfect structures in existence, from the point of view of art, had Puvis here been given his chance. As perfect as the Sistine Chapel, and far more soul-touching and human. Why could he not have had it? Why, when the right man arises is he not taken possession of, surrounded, if need were by ramparts of fire, until his right work is done? Think of the serene, pure, thoughtful, ecstatic "Enfance de Sainte Geneviève," its perfect harmony with the character of the building, and then imagine the whole interior of this sacred pile tempered to this saintly scheme of color and elevation of thought. As it stands to-day the Panthéon, as a whole, is no better than many other structures decorated by various minds and hands. Rich heavy painting which calls for a different setting, side by side with the ethereal conceptions of Chevannes—a lost opportunity. Will the world ever heed, or art ever come into its own! When I speak of rich heavy painting I mean the insistent, virile work of Bonnat and Jean-Paul Laurens, and the academic transcriptions of legendary and sacred story by others as well, any of whom would have been more appropriately engaged in the sumptuous palaces of the Adriatic or in Halls of Justice, than in



THE CHILDHOOD OF ST. GENEVIEVE, BY PUVIS DE CHAVANNES, IN THE PANTHÉON, PARIS.

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this severe cloister-like interior of the Panthéon where Puvis has set so noble and restrained a pace. The careful selection, then, of the men best fitted for a particular architectural environment would be a long step towards successful issue from problems of this character. The effect of, say, M. Bonnat's method in the chamber with that of Chavannes cannot fail to be dissonant. This is not depreciating either Bonnat or Puvis; Bonnat builds up his figure and his interiors with the plastic touch of the sculptor; they seem at times all but in relief. It is bone, sinew and epidermis—textile fabric, masonry and woodwork, if his illustration demands them, that he gives with no hesitating hand, and without regard to the setting, order of architecture or few if any of the conditions exacted by the place he is supposed to embellish. With Puvis, on the contrary, we are in the presence of a world he has created, which belongs essentially to those who people it, so simple, so positive, so natural does it all appear—and presented with so perfect a tact and judgment that we do not regard the setting inconsistent with the scene. This I think we decidedly do with most of the other works in this Panthéon of Great Men. I have taken this building, which in its mural painting was so well begun, as an example of an opportunity lost, and have sought to emphasize the desirability of being alive to the opportunity and of seizing it against all apparent hindrances, in order to give to the world that unique and worthy object, a great work of art. Perhaps at no moment in the history of our country has it been so clearly our duty to draw apart, to sit down for a time, and consider this question, than the present one. We are raising cathedrals, building palaces and churches; and every new structure in this rapidly developing country should be hailed as a new possibility, a fresh opportunity. We have now a class of workers who devote their whole though to the study of interior decoration. Our mural painters are, as never before, in friendly consultation with our architects. These two classes of artists begin to feel their inter-dependence and this is a most promising side of the question. Together they study the special treatment certain surfaces should receive—they take into consideration the depth or shallowness of a recess; the pitch of a ceiling; the height, breadth and length of a chamber, with a view to emphasizing its purposes and accentuating its best features. It is here that painting truly becomes the handmaiden of architecture, and that the two arts combine to create one perfect work. Now, had this always been the practice, what mistakes might have been avoided in buildings, that, as an afterthought, have received painted decoration! Is it not perhaps true that some effect of Abbey's fine work in the Boston Public Library may be lost through the inadequate lighting it receives? These compositions are full of archæological interest; they are not

only artistic in plan, they are scholarly in research of detail which, in a depository of the literatures of the world is of peculiar significance and value, as aids to the research of students. Much of this seemed thrown away in the obscurity of the upper part of the room when I chanced to see these pictures in place. If it was the original intention of the architect to thus ornament these walls this is an opportunity to a certain degree lost. As far as we have gone in mural decoration, it is fair, I think, to say that, until very recently, the painter has been obliged to adapt himself to the conditions he has inherited, so to speak, from the architect who has gone before. In the new order of things we could wish the work produced should be one work—that of both architect and painter. But in many existing cases the architect has, by the use of ornamental relief work in plaster of some conventional design, left no space for the painter—this, either through thoughtlessness, or for reasons best known to himself. We have heard regrets expressed by painters that this is so, and can call to mind instances where the lavish use of marbles or the above-mentioned Renaissance arabesque relief has precluded the introduction of pictured surfaces. One of the concert-rooms in the Madison Square Garden is an example in point, or was so a few years ago. Again, the long reception room of the Fifth Avenue Hotel was decorated by a mural painter, and here the ceiling is so low, and the light so poor that the work cannot be seen to advantage. This, of course, was an afterthought, and architects now designing, with mural painting in mind, would considerately arrange for the proper height and lighting by which to display such ornamentation. The architect does at present often wish to provide propitious spaces for, shall we say the accompanying painter? This is as it should be—it was formerly the coming painter, and he came long after the architect had wrought. As we have hinted, the remedy is in collaboration from the beginning of the building. Architect and painter must get together—the painter to direct the best means of securing advantageous illumination for his pictured panels or ceiling, and the architect to decide if this may be done in obedience to the structural integrity and beauty of the chamber to be embellished. In this way beauty may be achieved without any sacrifice of utility or architectural rectitude.

And another point it might be well for the architect to bear in mind: Further success may be obtained by his handing over to the painter the whole chamber he is to decorate and let him, the artist, plan the color scheme from floor to ceiling, rather than to parcel out certain spaces in the same room to several and various men. With the princely fortunes here and the alert American minds that have achieved them, there is a field for the encourage-

ment of mural painting, as wide as the country itself. Westward, not only the course of Empire, but the course of Art is evidently taking its way. There is opening to all branches of the fine arts, a future for greater triumphs than perhaps any of the past. Certainly the past is rich in precedents, they are the possession of the present; but to this must be added a world of new vision. The various movements in art during the past twenty-five years have contributed treasures of beauty revealed by a finer faculty of seeing. This newly acquired manner of using the eyesight has alone so developed the method of manipulating and using color that the palette of the painter of to-day is extended and clarified—its range is wider, and in the greater liberty, thus acquired, the artist can surprise the very secrets of the circumambient air. The all-enveloping ether palpitates, vibrates to his touch, and emotions of a finer and subtler kind are evoked and flung upon ceiling and side wall with an airier but with more thrilling result than the dreams, even, which Raphael traced on the walls of the Farnesina. It is characteristic of our race to seek the best that is being done, if we only give ourselves the time to ascertain what the best is, so that with the generous expenditure which those who love fine things will be more and more earnestly sought. Our architects are interesting themselves, as we have said in this matter of allying their work with those other arts which properly belong to it—painting and sculpture. They are, much more than formerly, co-workers; and when this practice becomes more general we may reasonably look for great results. For it is by consulting in advance, co-operating, in a word, that the question of light, quantity of mass in composition, and perfect key of color may be most effectively secured. Painters, architects and sculptors will eventually, let us repeat, act together and in accord with a view to creating one work.

There is, however, a pre-requisite to this desirable end, and that is a sympathetic and an appreciative public. The more the layman will interest himself in these questions the brighter will be the prospect for a happy issue in mural painting. Let him, in the same way that he seeks to understand the purpose of the portrait painter, of the painter of landscape, or the intention of any worker in the arts, endeavor to train himself to become a critic of this phase of painting, so that when he stands in the presence of pictured walls and spaces in some great building, he may be sensitive to the success or non-success of the work done there. The laymen should be able to feel that a controlling intelligence has been active, giving to the artist's painting and to his composition an architectural fitness that belongs essentially to the place. And in any case decorative painting has this advantage over painting that is portable, that it is always seen in the position it was designed for. It has been

done to be viewed in that special light and at that actual distance, and with the intention of producing the effect it possesses for the beholder. If then these conditions have been adequately met the right impression will be received. As much can not be said for easel pictures which suffer often great detriment through careless or incompetent placing. As for themes with which to picture the walls of our great buildings and fine houses, many are to be found among the multifarious activities which go to make up the wealth and greatness of the country, that are as fine as any rising from older traditions, and as picturesque as those that legend offers. The very mechanical expedients that our civilization has evoked, the appliances of transportation, inventions of electricity, facilities to agriculture and to the industries provide subjects most fitting to be traced on walls of banks and trust companies suggesting the sources from which these institutions draw their "sinews of war." The great surfaces to be found in railway stations, hospitals, colleges and halls of State hint, almost before a touch of painting has been done, the appropriate thought that should speak from the walls. The material for æsthetic charm and picturesque portrayal is not alone the property of the ancients, although many moderns seem to cling to it as does the Christian to his hope of salvation—salvation is here at our doors, and as in other provinces of thought it may be found in the effective use made of present opportunities and present conditions. Then, in time, work so done will become hallowed by tradition and tell the story that the beauty which exists to-day has become a classic of the past.

If modern decoration could be conceived in some such spirit, respecting in its practice the canons that control it, there might burst upon this western world a vision that would rival the splendor of the Farnesina or the Vatican.

Frank Fowler.



THE OLD STOCK EXCHANGE.
Built in 1865.

BOSTON PUBLIC

THE NEW YORK STOCK EXCHANGE.



OF all the figurative definitions given of architecture, none is more apt for expressing the general effect of a noble work than this: poetry in stone. Emerson defines poetry as "The perpetual endeavor to express the spirit of the thing, to pass the brute body and search the life and reason which cause it to exist." Applying this definition to "architectural poetry" it is evident that a true test of the highest and most essentially æsthetic merits of a building is thereby afforded. As an illustration of a thought, then, as a symbol of an idea, as an exposition of the characteristics of an age and people, architecture enters a province above and beyond that which merely concerns the value of things utilitarian.

Unlike those of historic times and places, the buildings of to-day that best tell the stories of our people are, with exceptions here and there, commercial buildings. The vast monuments of the ancient Egyptians are good indices to Egyptian life, which was ever ponderously determined upon death, the chief end being to be buried well, and to give imperishability to the corpse. The Greeks' philosophy of life was of another sort: death was merely the gateway to immortal glory; he loved life and adored beauty, and his perfect senses were portrayed in the temples and tombs, which, in the words of Shelley, "Seem not so much tombs, as voluptuous chambers for immortal spirits." The advent and growth of Christianity brought new aspirations and new wisdom to the minds of men. No more eloquent records of the feelings, aspirations and enthusiasms of all classes in mediaeval times—princes, priests, masons and mathematicians alike—were possible than those to which the great Gothic cathedrals of Europe bear silent witness.

In our own land to-day, this contemplation of architecture as a sign board to point out the dominant characteristics of a nation holds no less true. The great prosperity of the country, the absorbing business of making money, the large scale of commercial and financial operations are evidenced more plainly than words can tell by our business buildings. It is fitting that the New York Stock Exchange, which has often been termed the "Business pulse of the nation" should at this time of unexampled prosperity begin the erection of a great and magnificent building, which shall be at once its home, and the focus of the country's business interests. It will be the first great commercial edifice to be built in New York in the twentieth century, a fitting precursor of an age destined for

great buildings. It will represent the highest engineering achievements of modern construction; and it will contain architectural features of a unique and impressive character. In fine, it will be a monument typical of this era of great commercial buildings, and illustrative of the ruling tendencies of the American people.

The intricacies of architectural design are seldom appreciated by the layman. They are usually not apparent in the completed work, and for this reason description and criticism of the same often lose in value. Mere description of a great building fails to describe and criticism is largely superficial. In architecture, as in law, and



BROAD STREET CANAL IN 1650.

as in most fields of human interest and endeavor, until all the facts relating to a case have been known and duly weighed, a just judgment cannot be passed.

A problem such as the designing of the New York Stock Exchange was a labyrinth of many exacting and limiting conditions each of individual importance, like the arteries of the human body, but all interdependent, and closely related to the architectural motives of the design. In this problem there was no single dominant feature permanently fixed at the start and to which all other features were made subservient. Everything depended upon everything else and nothing remained unchanged to the end. Hence the working out of the design consisted from beginning to end in a series of adjustments. It shall be our purpose to trace herewith the history of these adjustments, supplementing the account by such data re-

lating to the ways and means of operating business upon the Stock Exchange as may bear directly upon our main subject.

An historic association of a most appropriate sort is attached to the site which the Exchange has occupied since 1865. It is necessary to turn back the pages of history to long before that memorable meeting of brokers in 1792 held under the spreading branches of a butternut tree, which, at the time, stood in front of No. 70 Wall street, when the first steps were taken towards organizing what was destined to become the greatest mart in the world; back another century before the building known as the Meal Market was erected in lower Wall street in 1709; back still further before that fateful day in 1664 when a fleet of English war ships sailed up the bay, and stout old Peter Stuyvesant stood with his wooden leg braced against an angle of the palisaded stone and mud fort, prepared to die rather than surrender his town; back finally to the first chapter of the history of the old Dutch town, when Broadway was an Indian trail running along the ridge of a hill, when Wall street was a palisade or "waal," built to prevent invasion, and when Broad street was a creek which the burghers converted into a canal after the pattern of their beloved Amsterdam. Here stood many of the best houses in the village, built a sufficient distance back from the canal to permit a generous width of promenade. Here the simple life of the settlers, when not harassed by the Indians, peacefully ebbed and flowed. Here, in the long summer twilights, sat the burgher with his long pipe, and the wife with her knitting, and watched the children at their play, and chatted with the passing friend. And here the friendly Indians came in their canoes and bartered with the settlers, exchanging their beaver and other skins for beads and such things as were dear to the Indian heart.

Prior to its possession of an entire building in 1865, the New York Stock Exchange had quarters in various buildings. Starting at the famous old Tontine Coffee House, soon after the butternut tree meeting, the brokers in 1827 moved to the First Merchants' Exchange Building, Wall and Hanover streets. Nine years later they moved to the Jauncey Building, then at No. 43 Wall street. These quarters sufficed but six years, the next on the list being The Second Merchants' Exchange, which building is now the United States Custom House, Wall and William streets. Following this comes the old Corn Exchange Bank Building, 1852, corner of William and Beaver streets, and two years later, Lord's Court, which had entrances on William and Beaver streets and Exchange place. Then, in 1865, a site at 10 and 12 Broad street was purchased and a building erected by the Stock Exchange Building Co., a corporation composed exclusively of Exchange

members. It was not long before extensive alterations to the new building were necessary. In 1869 occurred the amalgamation of the Stock Exchange with the Open Board of Stock Brokers, which consolidation, together with the admission of the government bond brokers, increased the membership of the Exchange from 583 to 1060. Hence the entire reconstruction of the building during the following year. Since then further alterations and additions have been made from time to time, the last change of note having been made in 1897, when the New street end of the ground floor of the Commercial Cable Building, which adjoins the Stock Exchange, was rented for the purpose of providing a smoking and reception room for the members and their friends. But all these efforts failed to more than temporarily stay the constantly increasing demands for space. These demands became so urgent that a committee was finally appointed and empowered to devise ways and means for providing the much needed facilities. This committee unanimously recommended a new building and forthwith proceeded to draw up a program of specifications for that end. The result was a competition, in which several of the best known architects of the city were asked to enter, and which was won by Mr. George B. Post. The program of competition, which the Building Committee, with the assistance of Professor Ware, of Columbia University, and Mr. Charles W. Clinton, of Clinton & Russell, had prepared, called for two distinct schemes: one of which was to provide an entire story which should be rented for banking purposes, and the other was to omit the banking story in case it should be found to be undesirable. The latter scheme was the one adopted, for reasons which will be explained hereafter. The elevation which Mr. Post had designed for the first scheme, however,



THE OLD TONTINE COFFEE HOUSE, CORNER OF WALL AND WATER STREETS.

had such strong qualities in its favor that the committee desired to preserve its features as far as possible by adapting that elevation to the scheme decided upon. In addition to this difficulty, the problem was further complicated by several matters which were constant sources of annoyance almost to the very end: first, the extraordinary irregularity of the contour of the lot; second, the wide disparity in the three street levels, and the consequent excessive inclines and complicated floor levels in the lower stories; third, the peculiar conditions found in the subsoil; fourth, the disposal of the great safe deposit vault.

Foundations.

It is an interesting fact that the solution of the important problem of foundations for the New York Stock Exchange was determined by the same topographical conditions which two hundred and fifty years ago made Broad street the first trading locality on Manhattan Island. The old ditch of by-gone days, which had long since disappeared from view, was found, when extensive borings were made for the new building, to be an important factor in the situation. The survey made by the engineer at bed rock of the entire plot of ground to be occupied by the Exchange, disclosed a variation of water levels of between four and five feet, the lowest levels being on the southern end of the Broad street side. The explanation made by the engineer of this anomalous condition is that the water which, under the southeastern portion of the property is still drained by the old ditch, on the western and northern position is held back by some sort of a dam, possibly the remains of an old beaver dam. Another theory conceives the presence of blue clay in the subsoil. Since the security of a pile foundation depends upon the total submersion of the piles, this solution of the problem under discussion was abandoned. Although it is only a few years since the pneumatic caisson was introduced in the construction of New York buildings, it has already practically superseded all other systems of foundations for the large downtown business buildings.

When Mr. Post decided to place his building upon a caisson foundation, the problem resolved itself into a question of excavations: how much of the sixty odd feet of sand, gravel and water, between the surface level and bed rock should be excavated? Every consideration, except possibly that of cost, emphatically demanded that the entire lot be excavated to bed rock excepting portions under the Wall and New streets entrance lobbies.

The most thorough investigation, however, was made of several other schemes before they were finally abandoned in favor of the deep excavation. The highest water level was found to be a few

feet below the contemplated position of the Board Room floor. Had the lot been excavated only to this point, therefore, the depth would have allowed but two low stories for accommodating the various underground requirements, such as boiler and engine room and space for ventilating machinery, storage batteries, etc., leaving none for hat and coat rooms, locker rooms, toilet rooms, barber shops and baths. It was possible to place these features in the upper stories but only under cramped and unsatisfactory conditions. It might seem that the 33 feet of extra depth obtained by excavating to bed rock was an unwarranted increase, and that greater economy would have been gained by excavating only to such a distance below water level as would assure sufficient space for the basement and sub-basement stories. This latter resource, however, was found to be impracticable, and for a rather unusual cause. Mr. Post discovered by computation that, owing to the fact that there were no interior supports in the immense Board Room, the upward pressure of the water in the subsoil would be three times greater than the superimposed weight, which would have resulted in the upheaval of the Board Room floor, together with the stories underneath.

Safe Deposit Vault.

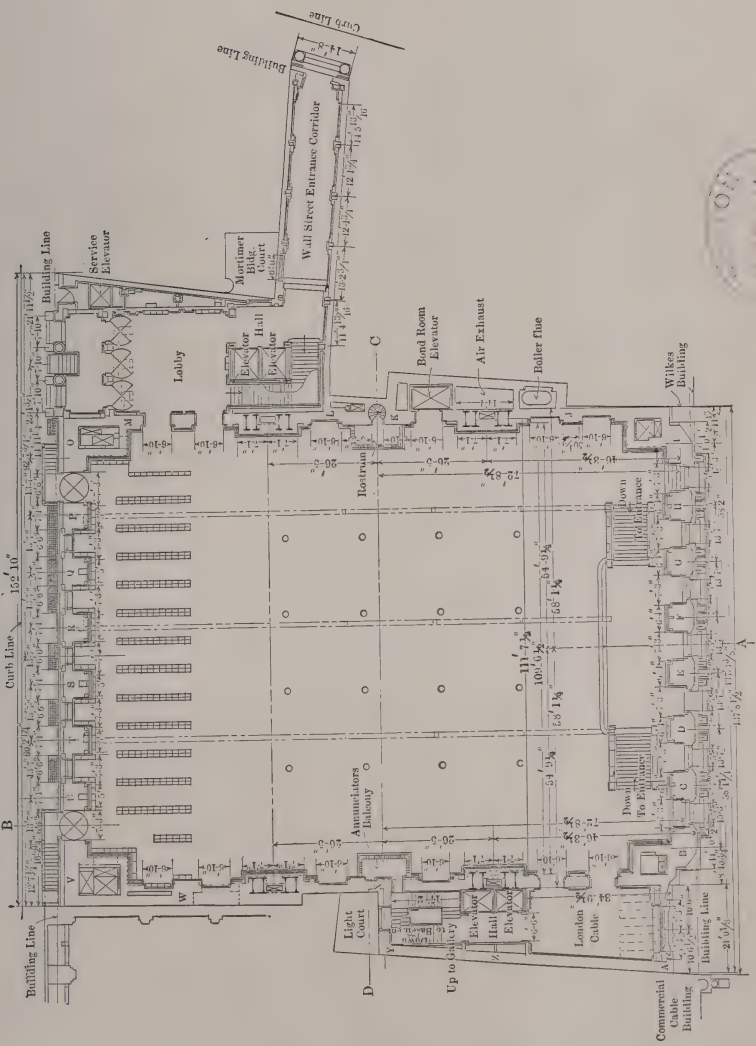
Several feet under the Board Room floor of the old Stock Exchange Building lies a large stone vault. In designing the new building this old vault proved to be a stumbling block. As can be seen by the accompanying plan, its lines are askew with those of the building, besides which its position bears an awkward relation to the desired floor heights. It was, in fact, a veritable *bête noir* in the planning and construction of the underground stories. Anything that affected the inviolateness of this vault, however, was not countenanced until after many months spent in developing the plans. But there came a day when the evidence against the retention of the old vault had accumulated to a convincing degree, and it was therefore finally decided that a new vault of larger size and more modern construction should be built. As will be seen by the plan, the new vault is designed to occupy a space just south of the old one and at right angles to Broad street. During the construction of the new building the old vault will not be disturbed until the new one is completed. The position of the new vault was only determined upon after many conferences between the Building Committee and Mr. Post, and after dozens of sketches and scale drawings had been made.

Board Room Floor Plan.

The critical point in the designing of the new Exchange did not concern the questions of foundations and vault, the solution of which were more or less arbitrary. In the development of the Board Room certain essential requirements were fixed at the start, and it was the degree to which these requirements were satisfied that the success of the building hinged upon, and which won the competition for Mr. Post. Briefly stated, the improvements demanded by the brokers with one accord were: more space, more facility and convenience for the transaction of business, more light upon the Board Room floor and better ventilation. Unless these improvements were affected to a very marked degree in the new building, it was a foregone conclusion that the latter would prove a mammoth failure regardless of its other qualities.

Increased Area.

The new Board Room floor is designed to contain 15,000 square feet, approximately an increase of about 60% over the area of the old room. This was gained by various means. In the first place, the new lot, owing to the accession of the Western Union Building is 35% larger than the old. Besides the increase of the superficial area of the Board Room, considerable further space was gained by judicious planning of the floor itself. In the old building a large entrance vestibule at the Broad street end robbed the Board Room of 2,000 square feet, besides a great deal of valuable light. In the new building this entrance is of even more generous size, and owing to its depression beneath the Board Room floor, robs the latter of only 350 square feet. Throughout the entire development of this part of the problem, the paramount idea was to increase the floor space wherever possible and without jeopardizing the facilities for transacting business. Any scheme which would result in a reduction of the area was likely to be instantly condemned by the Building Committee. An important gain in floor space was made by a new arrangement of telephones, which will be discussed later. Then, too, much of the space around the walls of the old Board Room which was taken up by the rostrum, spaces for the public, booths for telegraph operators, London Cable Co., outside messengers, etc., is gained in the new design, for all of those features are removed from the Board Room floor proper. The rostrum in the new building will be placed on a balcony on the north side of the room, and will be reached by a small stairway. The annunciators with their keyboards will also be placed upon balconies situated symmetrically opposite each other. They will be very accessible from the floor and in direct communication with the various entrances by means of telephones or tubes.



BOARD ROOM FLOOR PLAN.

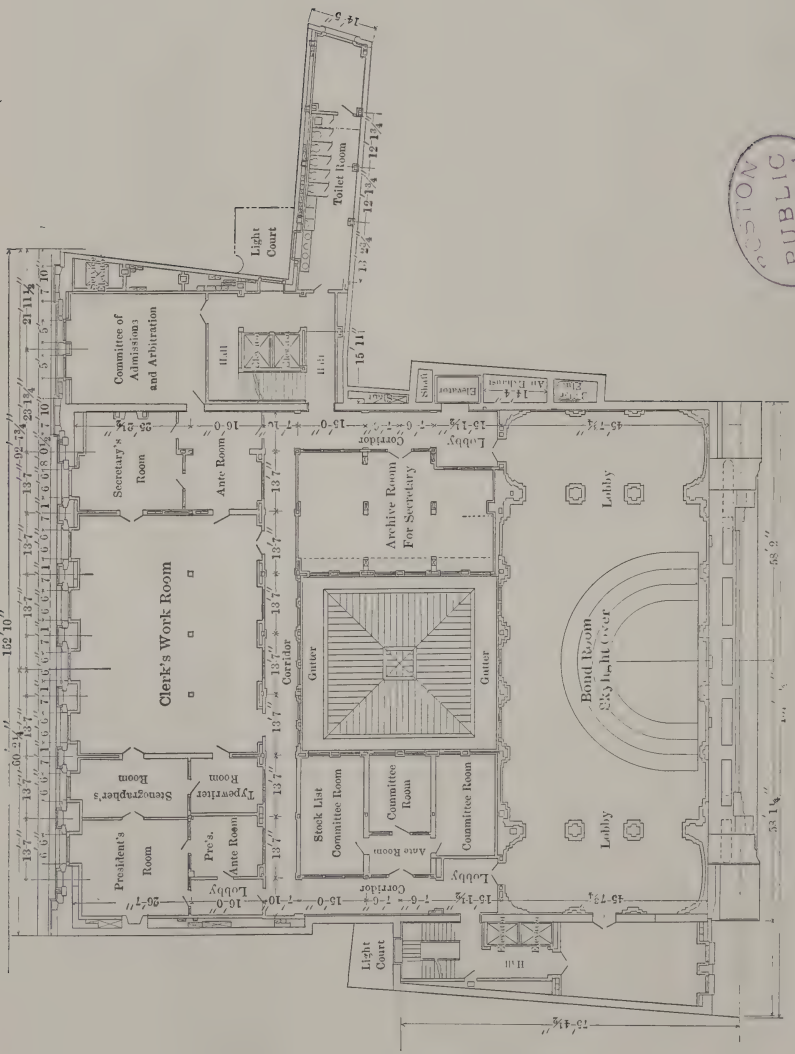
The public spaces will be confined to the side alcoves and likewise the London Cable Company. The outside messengers are provided for by a room in the basement reached by pneumatic tube service from the Board Room and connected with the three streets by corridors in the basement. By means of these various changes, a gain of about 60% in unobstructed floor space was made over the old Board Room, which gain does not include several hundred square feet in the alcoves which are used in direct connection with the floor.

Improved Facilities. Telephone System.

It is probable that many people do not realize how important a factor in the business of the stock broker the telephone has become. Fifteen or twenty years ago, when all orders were transmitted from the broker's office to the Exchange floor by messenger, a boy who would make the round trip to and from a nearby office inside of fifteen minutes was considered to be in line for promotion. The same operation is now performed by telephone in sixty sconds and without the boy. The desirability of offices in the immediate neighborhood of the Exchange in the old days, was, of course, very great, and the rents of the same correspondingly so. It is difficult to tell how the vast amount of business that is now transacted on the Exchange, amounting several times lately to over 3,000,000 shares in one day, could possibly have been undertaken before the invention of the telephone. An army of boys would have been required by every large brokerage house, and then the orders would necessarily have been sent in batches instead of individually, as is now possible. There are to-day 500 telephones on the floor of the Exchange, and all of them are in almost constant use from 10 o'clock in the morning to 3 o'clock in the afternoon. In the old Exchange they were originally divided into two sets at the New street end of the floor. From time to time, as additional ones were required, they were placed in every conceivable nook and corner, sometimes at an inconvenient distance from the centre of operations, and not infrequently in dark places. Various and manifold were the schemes designed for solving the telephone problem for the new building. In the competition drawings, the telephones were placed in each end of the room, the entrances then being in the side. When a central Broad street entrance was decided upon, the telephones were all arranged at that end, on either side of the entrance. This seemed satisfactory from the architect's point of view, but it would not pass under the critical eyes of the Building Committee and their associates of the Exchange. The objections made were that the telephone clerks were obliged to use the same entrances as the members of the Exchange, and to pass over a por-

tion of the Board Room proper in getting to the telephones. This scheme abandoned, others were designed for placing the telephones in the alcoves at the sides of the room. These were promptly discarded by the committee as being unfeasible. Then several sketches were made showing circular and elliptical arrangements around the walls of the room. Owing to the necessarily rectangular form of the room, these arrangements proved extravagant in utilizing the floor space, as well as wall space for bulletins—a consideration hardly less important. It was suggested by a member of the Exchange to place the telephones around the bulletin poles in the centre of the room, and sketches for this scheme were accordingly made. They showed conclusively that not only would an excessive amount of floor space be taken up thereby, but also that the arrangement would result in vast confusion to the brokers, who would be in danger of bumping into each other at every turn. After several weeks spent in this sort of floundering, Mr. R. H. Thomas, the chairman of the Building Committee, suggested the key to the solution of the telephone problem. This gentleman, whose earnest co-operation with Mr. A. E. Willauer (the draughtsman in charge of the job at that time in Mr. Post's office) proved such a potent factor in its successful development throughout, suggested that the Broad street end of the building should be made the monumental end, and the New street the working end, so to speak. With this idea in mind, the telephones were once more drawn out, the resulting plan showing a scheme so simple, straightforward and satisfactory in every way as to give the uninitiated but an adequate idea of the labor spent before it was perfected. The telephones, as now arranged and shown in the illustration, are in one group at the New street end of the building. The scheme necessitating but one aisle instead of two, as formerly, gains a clear five feet in the length of the Board Room floor. A separate entrance is provided for clerks, who will not transgress upon the Exchange floor proper. When it is considered that business on the Exchange is conducted almost instantaneously, that the loss of a second's time may be a serious thing, the great importance of uniformity in telephone facilities will be appreciated. It is interesting to note that despite the large amount of space which the great piers take up on the floor, they are turned to such good purpose by the system of encircling telephones, that an actual saving in space is effected; for more telephones have been designed in these positions than would have been possible had the piers been replaced by a simple running wall only thick enough to support the end of the building.

The pneumatic tube service to be installed to and from the new Board Room will be very complete. A direct system will be used,



BOND ROOM FLOOR PLAN.

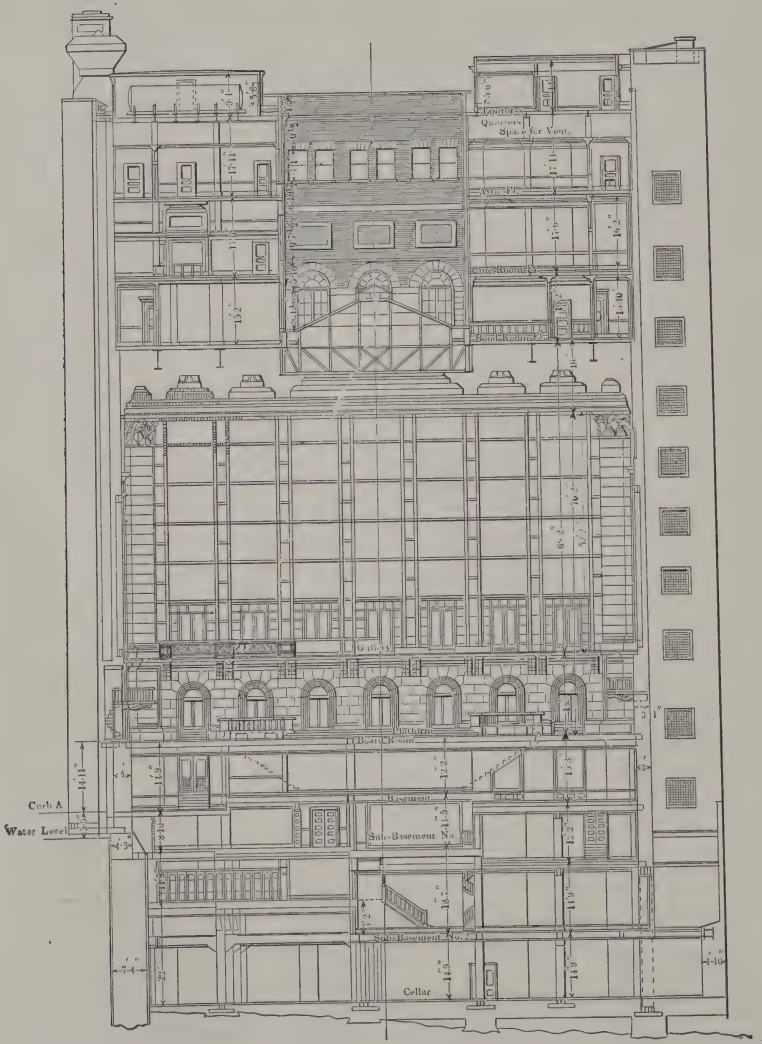
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consisting of about 30 separate lines and their returns. These will extend to the various telegraph and cable quarters and also to the Luncheon Club Room, Bond Room, smoking gallery, etc., so that the members may send and receive telegrams and messages from every part of the building without depending upon messenger boys.

Increased Light.

As has already been mentioned, one of the most radical defects in the old Stock Exchange was inadequate lighting of the Board Room; hence this improvement was strongly insisted upon for the new building. It might almost be said that this idea was paramount in Mr. Post's first conception of his design, determining, as it did, the most impressive and monumental features of the building. In brief, the problem was how to get the greatest possible amount of light in a room 138 feet long by 112 feet wide and 80 feet high and extending from street to street, said room to have two stories above it, the exterior facades of the building to be treated in a monumental way appropriate to the scale and magnificence of the plan. It was evident at the outset that heavy supports were necessary extending across the two facades to bear the superimposed weight of the upper stories. It will be at once apparent to the layman that a round pier standing free will obstruct less light than a square pier of the same diameter. Hence the interior colonnades of the facades. Next arose the question how to screen the interior from the elements. The solution cannot but be regarded by anyone familiar with architectural precedent as bold in the extreme. Instead of building a wall back of his columns and puncturing that wall by many separate windows, Mr. Post resolved to construct one immense glass screen from base to entablature and extending the entire width of the facade, thus making practically one window of the whole front of the Board Room on each street. The effect of this in the completed building can be better imagined than described. We know of no similar example of monumental architecture from which to draw comparisons. The nearest approach to it might, perhaps, be found in some of the old classic temples, whose giant exterior columns appeared from the inside darkly silhouetted against the floor of brilliant light from without. It is intended to make this plate glass screen as transparent as possible with a minimum of iron work essential to its support, so that the stone columns 66 inches in diameter and 52 feet high may form an important part of the architectural effect of the interior. The aesthetic effect can only be judged when the building is completed. It is certain to be interesting and striking.

For cleaning these immense windows a kind of painter's scaffolding will be provided. Shades will be fastened to the vertical iron



TRANSVERSE SECTION SHOWING GLASS SCREEN IN BOARD ROOM.

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mullions and will be thus designed to roll right and left instead of up and down. They will be operated by electric buttons on the Board Room floor. Such large surfaces of glass will necessarily radiate much cold air into the room in freezing weather. Steam radiators will, therefore, be installed at the bases of the windows for the express purpose of heating their interior surfaces. The glass for a certain distance up will be made double, the space between serving as a cold air slit through which the air will circulate down and over the steam coils placed at the gallery floor. The heated air then arising will be dispersed over the interior surface of the window. The total wind pressure, at 35 lbs. per square foot against the outside surface of each window, will amount to 75 tons.

To resist this force of nature, and also to support the 13 tons weight of each window, 18-inch iron mullions were designed. These iron columns will be placed in pairs directly back of the stone columns and hung from overhead girders. In addition to the two ends of the Board Room being practically all glass above the pedestal course, a large skylight will be hung from the centre of the ceiling. This will tend to diffuse the light more effectually, besides adding greatly to the architectural effect of the room.

The electric lighting of the Board Room will probably be confined to the ceiling. Clusters of incandescent lights will be arranged in the centres of the coffers, besides which arc lights will be suspended under the skylight or moved back against the sides thereof when not in use.

Ventilation.

The ventilating machinery will be in the cellar, with the exception of two Blackman fans in the attic stories. The fresh and exhaust air will be transmitted through rectangular galvanized iron ducts. The aggregate length of these ducts will be several miles, their total weight will be about 200 tons, and they will circulate 26,000,000 cubic feet of air per hour. The disposition of the system will be very thorough. For the three basement stories the fresh air drawn from a vertical intake shaft extending to the roof on the south side of the building, will be circulated by a nine-foot blower, and vented back to the cellar by a ten-foot exhaust, and then driven to a vent shaft on the opposite side of the building. For the Board Room the following system has been designed: an eleven-foot blower to supply fresh air through the ceiling panels at the rate of four feet per second, the ducts to be carried up in the corners of the room; the vitiated air will be collected underneath the Board Room floor and vented by the Blackman's to an air house on the roof. It is intended that the fresh air descending from the ceiling will, by the time it reaches the floor, be of an equal tem-

perature with the surrounding atmosphere, and, without causing a noticeable draft, will tend to lay the dust on the floor. For the upper stories, a ten-foot blower will be provided. Besides the foregoing, the system will include two seven-foot blowers for the cellar, a small fan for the kitchen and also a small blower for the storage battery room. All told, 160 HP. will be generated by the ventilating plant.

Architectural Treatment of Board Room.

A good example of the vicissitudes through which the design of the New York Stock Exchange was deftly steered is afforded by the changed location of the Board Room floor. As before mentioned, one idea of the Board of Governors was to devote the street floor of the new building to banking purposes. The program of competition, therefore, called for an alternative design showing the location of the Board Room on the second story, twenty feet above the level of Wall and New streets and over thirty feet above that of Broad street, and the original drawings were so designed. When the brokers came to give this matter serious thought the question was raised: suppose in times of panic or failure, when a member wishes to get from the floor of the Exchange to his office in the quickest possible time and several hundred men should happen to be thus interested simultaneously, how would they all get down the elevators (stairways being impracticable on account of height and insufficient space) without a crush and much loss of time? No one was prepared to dispute the force of this reasoning. Accessibility to the street and generous egress thereto from the Board Room was emphatically demanded. Brokers are accustomed to forceful and decisive measures. In a trice the interior design of the building was settled upon, the alternative scheme being thrown to the winds, and the draughtsmen in Mr. Post's office were stretching their paper for one of the hardest propositions that an architect has to encounter. This consisted in the adaptation of two facades to an interior radically different from that for which the elevation had been originally designed. These two facades, with their great windows and magnificent columns, were deemed too satisfactory to change. They fulfilled to a remarkable degree the practical requirements of lighting, and aesthetically they were no less successful, the unity of their design expressing the single great room within in a way that could not be misunderstoood by any intelligent observer. As will be seen by the sections, the Board Room floor was dropped to nearly the level of the New and Wall streets (thus adding about twenty feet to the height of the room) and a large entrance, solely for the members, designed in the centre of the Broad street front and leading by a generous double stair-

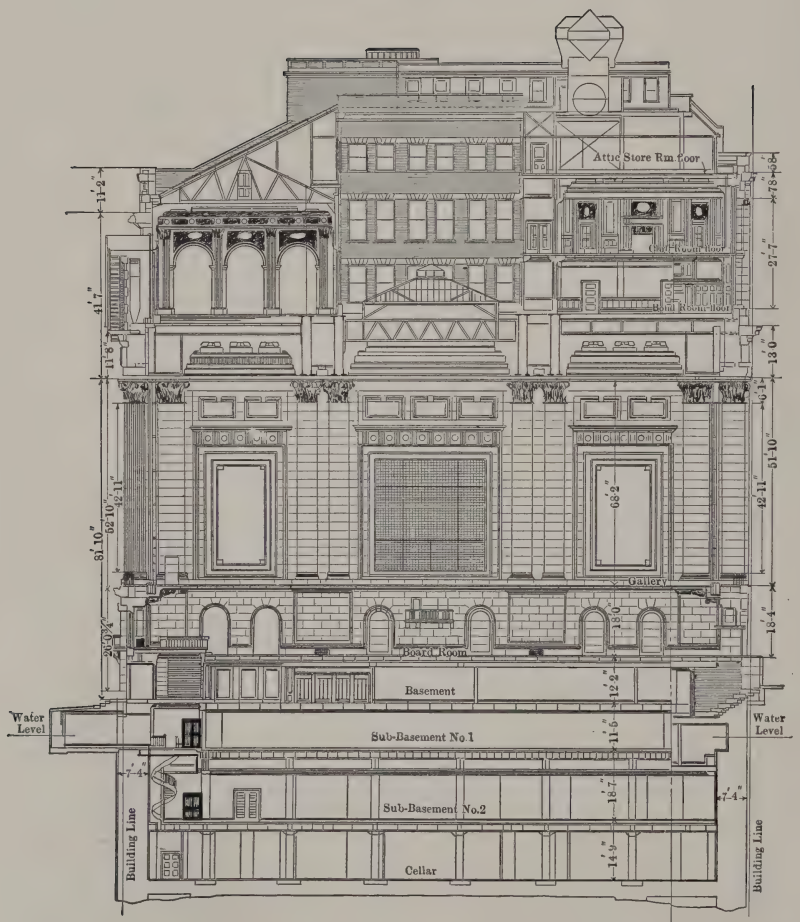
way directly to the floor of the Exchange. The extra twenty feet of vertical wall space was then treated as one great pedestal course, being the lower division of a classic order which, probably, has not an equal in scale in this country; the middle division, extending from the top of the pedestal to the cornice, is marked by four pairs of iron columns (boxed in by marble pilasters with gilded capitals) which support four flat transverse tresses having a clear span of 112 feet. These columns and girders, together with the marble columns and walls of the New and Broad street facades, support the upper stories of the Board Room. The permanent location of these eight interior iron columns was determined only after twenty or thirty drawings had been made. Their positions were affected by many other features of the building. At the risk of too severely trying the patience of the general reader who may have accompanied us thus far, we will briefly enumerate the chief difficulties attending this part of the problem, not so much because they are of particular interest in themselves as that they will serve to show the real nature, the hard realities of architectural design. A monumental building has a kind of personality which may be ever so simple, direct, truthful and harmonious, but which is the outcome of many perplexities and struggles. One of the requirements for the new Stock Exchange was a large interior light shaft in the upper stories. The location of this shaft, as well as that of the Board Room's skylight, obviously bear important relations to the centres of the supporting iron columns below. Again, the position of the light well was affected by the planning of the various rooms in the Club, Bond and Attic stories. During the development of the problem, as the disposition and proportion of these rooms were changed for various reasons, the centres of the columns below were shifted sympathetically; and vice versa, for there were considerations in the Board Room itself clamoring for recognition. The treatment of the marble wall spaces between the columns was in part simply aesthetic, and partly constructional. In the twenty-foot white marble pedestal course running around the room were designed the various entrances for the side alcoves, elevator shafts, etc. The arches of these openings were made circular to conform with the pedestal windows in the two facades, thereby establishing a continuous round-arched motif of openings and panels on all four sides. The locations of the side alcoves having been irrevocably fixed by the jags in the contour of the lot, their openings were necessarily confined to limited portions of the wall space. To escape these openings, the positions of the light iron columns in each side wall already dependent, as we have seen, upon conditions above, were jigged about most energetically. In the meantime, other obstacles had arisen. One of these was an iron

column in the wall of the adjoining Commercial Cable Building, as before noted. The Stock Exchange rents a large room used for smoking, reception, etc., on the New street end of this building, and it is proposed to connect this "Annex" or "Green Room" directly with the new Board Room. When studies were made, the coincidence in location of the Cable Building column and one of the arched openings designed for entering the Board Room was discovered. Then again, a passage from street to street designed in the basement story would have been practically closed had not the centres of the troublesome Board Room columns been placed so as to obviate this particular difficulty. During all the time that these practical matters were being adjusted, it was necessary to continually bear in mind the aesthetic questions involved in the decorative schemes for the extensive wall spaces above the pedestal course and between the pairs of columns, and also the architectural treatment of the utilitarian features in the pedestal itself, their proportions and arrangements with regard to each other, and their relations to the bold massive scheme of the Broad and New street ends. Finally, in this connection was included the study of two important features, both of which materially affected the positions of the Board Room supporting columns. These problems were: the designing of the Bulletin Boards (described below—a feature as important to the stock brokers system of transacting business as the telephone), and the architectural treatment of the corners of the room. Many months of patient study and thorough investigation were spent in these adjustments, the number and difficulty of which we have barely suggested. The opportunity to design an architectural *chef d'œuvre* (so imperfectly embraced in the old building) was so great, and the nature, purposes and significance of the building were of such peculiar, widespread and striking interest that the hard labor devoted to the problem was its own reward. It was a privilege to work upon it for the very reason that it was so difficult. The process of evolution was so long and varied, its requirements so exacting and the adjustments so nice, that the men who were thoroughly intimate with the problem through the entire period of its development were afforded a liberal architectural education and experience. Yet the sacrifice was very great.

The Bulletin Boards.

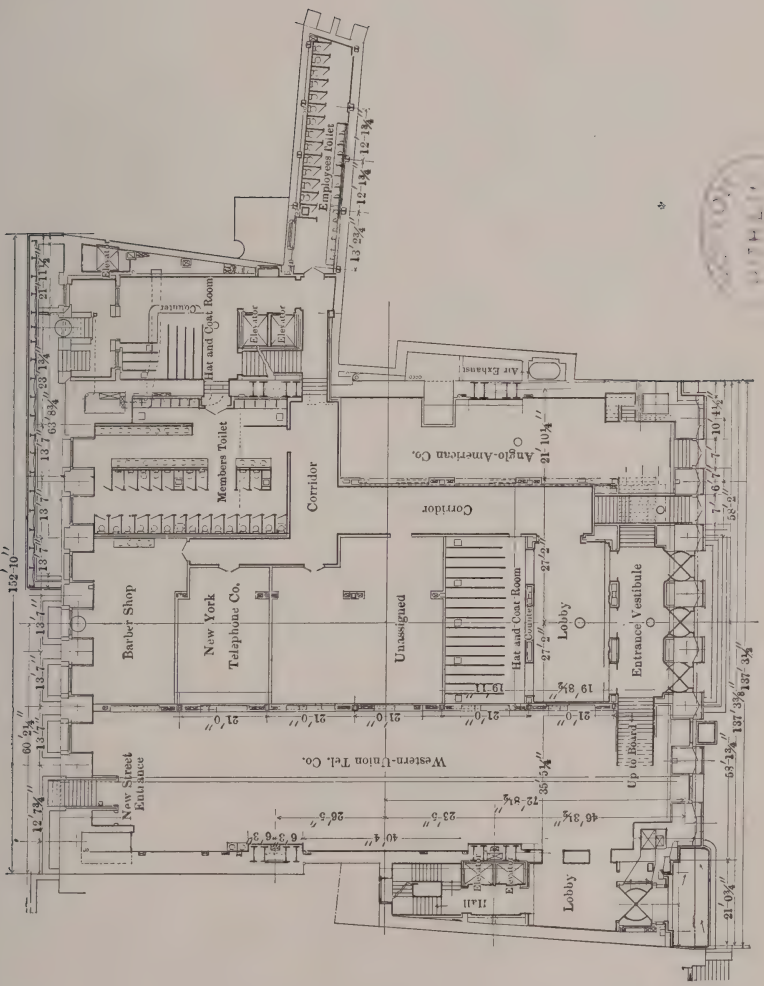
The casual stranger in the visitor's gallery of the Stock Exchange is mystified. To the uninitiated the scene is confusion worse confounded: a crowd of several hundred restless men moving about with short, quick steps on apparently aimless errands, or congregating in excited groups where they jostle and seemingly threaten one another and yell. Many appear to be afflicted with

some kind of intermittent insanity, the manifestations being violent and coming with great suddenness; men will join a group about some pole and begin yelling unintelligibly, accompanying each yell by a gesture suggestive of nothing so much as a baseball pitcher in the act of "lining in a hot one" straight from the shoulder. Often no notice whatever will apparently be taken of these ebullitions; then again a dozen arms will shoot out like lightning, and amid a bedlam of howls, two men will exchange nods, scribble something on their pads and stride off. The lunacy spasms subside as suddenly as they appear. A man may be yelling and gesticulating like mad one minute and then calmly and unconcernedly turn away the next, greeting some friend whom he hasn't seen, perhaps, since the day before, as he would a long-lost brother. Occasionally a man who has been staring around the walls will rise up on his tiptoes and talk violent finger language with somebody across the room; then again men will meet and begin to chat and joke and thump each other in apparent oblivion to the rumpus about, when suddenly one of them will dive off unceremoniously and disappear from view. The longer the stranger looks upon this scene, the more bewildered he becomes; he can see no elements of order in the actions of that surging mass, and can understand neither the beginning nor the end of the important transactions that he knows are occurring every minute. And yet there is no more precise nor better regulated system of doing business in the world than that in vogue on the floor of the New York Stock Exchange. In the present temporary quarters of the Exchange, situated in the southern end of the Produce Exchange Board Room, there may be seen on the east wall a large rectangular checkerboard apparatus with various colored stripes. This is the bulletin board, and its purpose is to inform the brokers when they are wanted at their telephones. The board is divided into 1,200 squares, each square having a cover or flap underneath which is a number, which represents a certain member of the Exchange. When the office member of a brokerage firm desires to speak with his partner upon the Exchange floor he rings up their private telephone, which is instantly answered by the clerk stationed there; the latter then presses a button which sets the annunciator key board in action, thereby disclosing the desired number upon the bulletin board. Meanwhile, the telephone clerk writes the order or message, if it be such, upon a slip, and by the time the broker on the floor (who is constantly watching the bulletin board) has reached his telephone booth, the order is ready, and he starts off to execute it. If a customer or other visitor calls at the Exchange to see a member thereof, the doorkeeper communicates with the man operating the annunciator, the desired number is dropped and the member own-



LONGITUDINAL SECTION SHOWING BULLETIN BOARD IN CENTER PANEL OF BOARD ROOM WALL.

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BASEMENT FLOOR.

ing the same thereupon goes to his booth and ascertains who his visitor is. Or should one member on the floor desire to speak to another whom he cannot see in the crowd, he orders an attendant to drop the other's number, and then meets the man whom he wishes to see at the latter's booth. In the Board Room of the old building the bulletin board was very long and narrow, extending clear across the New street end and just under the windows. This made constant watching it injurious to the eyes, but it was the only place where it could be seen from every part of the floor. In the new Board Room there shall be two bulletin boards, exact duplicates of each other, in the centre panels of the side walls above the pedestal course. Two conditions were imposed by the Building Committee in respect to the new board: first, that the numbers should be distinctly legible from every part of the floor; and second, that they should be arranged compactly so that a member who is watching several numbers besides his own (as frequently happens at lunch time, etc.) can cover the entire area of the board at a quick glance. The problem of designing a checkerboard containing 1,200 numbers, making an area of at least 800 square feet, so that it should fit in the space provided, should be a pleasing object to the eye and should harmonize with the architectural scheme of a room whose dominant note was given by a few features of simple but tremendous scale, was one which may be calculated to tax the resources of the most conscientious designer. In the new bulletin board, instead of the numbers being disclosed by the flap device, they will be made of opaque glass, which may be illuminated by electric lights behind. Back of each number (which will measure about 9x12 inches) will be placed a cluster of light bulbs, each of a different color, for the purpose of conveying more explicit information. Thus a red illumination might mean that a broker was wanted at the New street entrance, a green at the Broad street, etc.

Visitors' Gallery.

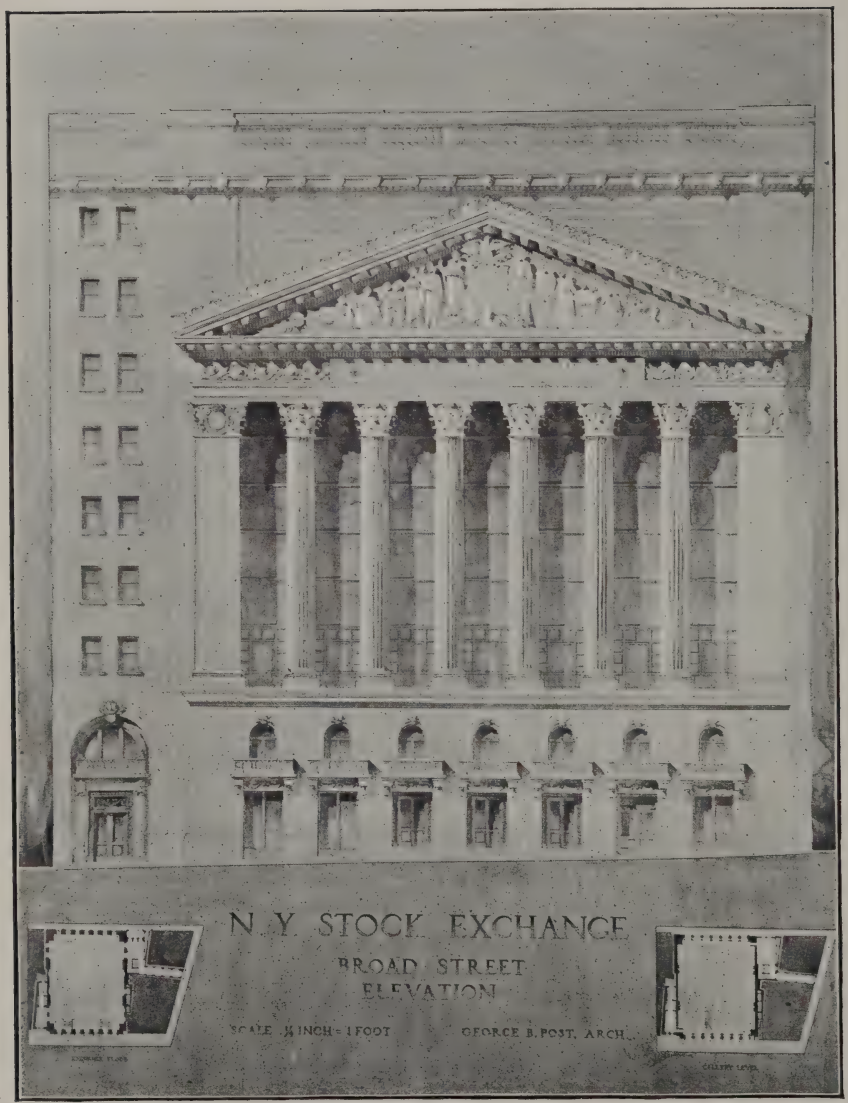
Ceiling, Etc.

The space devoted to galleries in the old Stock Exchange will be greatly curtailed in the new building. The members, as a rule, are adverse to allowing the public free and unrestricted entrance to the Board Room galleries. Although bombs and such things are not thrown about quite as recklessly in our country as abroad, it would seem the part of wisdom in these strenuous times to provide as well as may be against such a happening as the French Chamber of Deputies incident a few years ago. In the future, visitors will be admitted by cards only to the gallery at the Broad street end of the Board Room. At the New street end will be a similar gallery,

which may be used by the members in connection with the smoking room adjoining the north side. By means of glass doors in the great screen access from these galleries may be had to the small balconies shown on the elevation drawings. The new Board Room ceiling presented an interesting opportunity for interior architectural design on a single large surface. The limiting conditions were: first, the centre skylight; and second, the two central transverse trusses which form part of the supporting construction of the upper stories. At the outset, therefore, the ceiling was given three divisions, of which the skylight took up part of the central one. This arrangement, of itself, had the effect of disturbing the rectangular proportions of the room, making them more nearly square. Hence longitudinal lines were introduced dividing the width of the ceiling into seven coffers. These are designed to accentuate the exterior stone columns, which, as before noted, are intended to count in the interior effects of the room. By this scheme the skylight, instead of becoming a strongly accentuated feature in the ceiling, as at first intended, is now treated merely as a panel, differing from the others only in that it is considerably larger and constructed of glass. The material for the ceiling proper will be of plaster—white and gold. There is apparent in all the various sketches made for this ceiling, and, in fact, for the whole building, a conscientious endeavor to give due recognition aesthetically to every important constructional requirement; and, moreover, to confine all decorative treatment to such essential features. There is nothing meaningless and nothing unduly exaggerated. With all its diverse and complex elements, the design as a whole is simple, straightforward and consistent.

Lower Floor Plans.

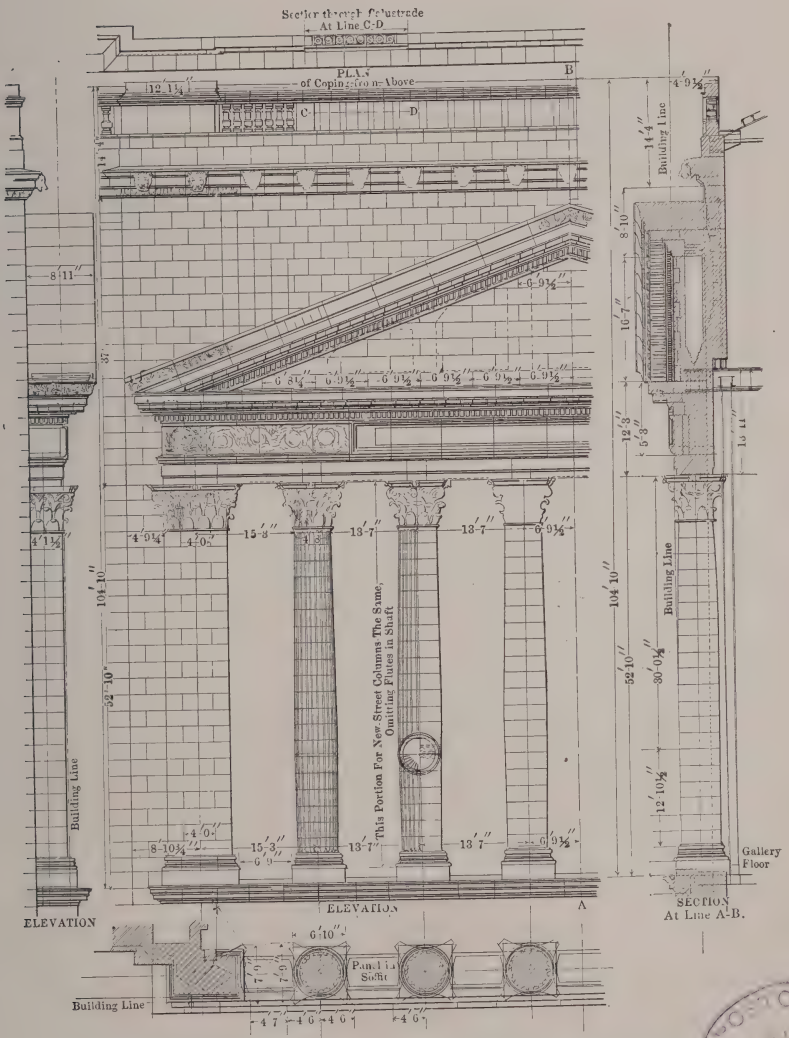
As before noted, the decision to excavate the lot for the Stock Exchange to bed rock caused the means for accommodating in the basement stories various features that in the old building were crowded in the upper floors or dispensed with altogether. Hat and coat rooms, barber shop, baths, corridor from street to street, private rooms adjacent to the vault for individual use, members' toilet room, employees' toilet room and employees' locker room will all be generously provided for underground in the new building. The removal of the employees' locker room from an upper to a basement story is a much-needed reform. Formerly, at the close of each day's business, hallways and elevators immediately became congested by a crowd of two or three hundred employees, all in a hurry to get to their lockers. Besides this, they were obliged to use the same entrance in getting to and from their elevators as the members. As arranged in the new building, the em-



BROAD STREET ELEVATION.

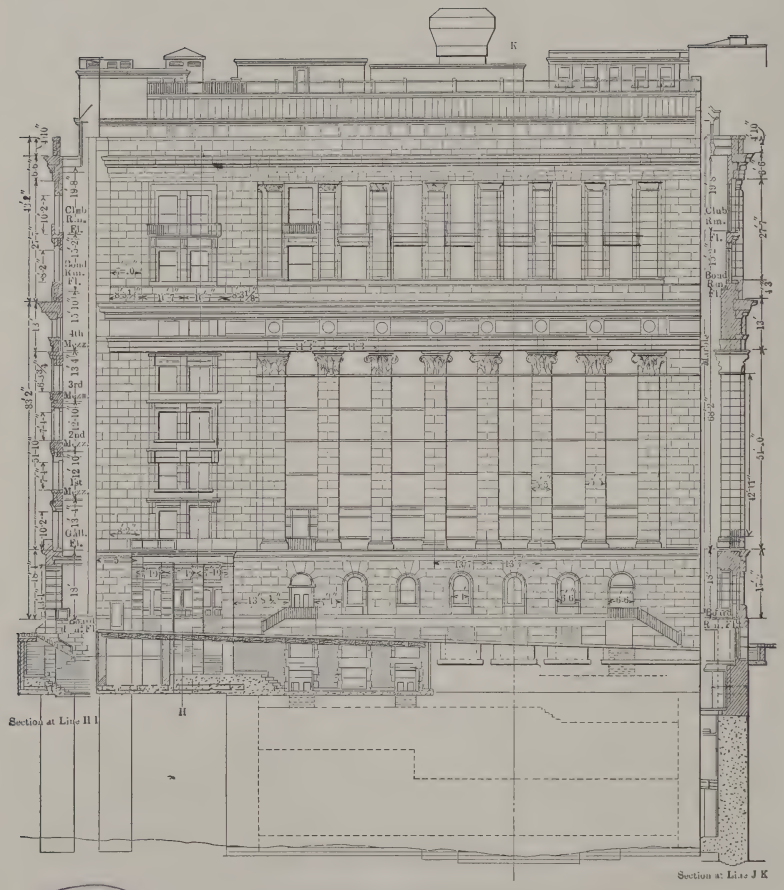
George B. Post, Architect.

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DETAIL OF MARBLE WORK ON BROAD STREET ELEVATION.

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NEW STREET ELEVATION.

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ployees will have a special entrance in the basement, and a special stairway leading therefrom to their locker room, besides another special stairway to the Board Room. Hence their means of access to the latter will be entirely distinct and separate from the main entrances.

Broad Street Facade.

Exception has often been taken, and with reason, to the violent incontinuity of the New York's skyline—particularly in the business districts. Twenty and thirty story buildings alternate with structures one-half and one-quarter as high. In many instances the lower buildings suffer, especially in comparison, by reason of having been designed approximately in the same scale as their towering neighbors. In close proximity to the site of the Stock Exchange are several very high buildings. The Commercial Cable, of twenty stories, is on one side, and The Wilks Building, of ten stories, is on the other, while directly across the street is the Manhattan Life, of twenty-one stories. Had the new Stock Exchange, with its equivalent of eight stories, been designed on the same scale as its neighbors—i. e., with the same relation between horizontal and vertical divisions—it would undoubtedly have suffered greatly in comparison, just as the old Exchange did. But with those magnificent Corinthian columns, fifty-two feet in height, and back of them the single undivided window, expressing with the most perfect frankness the great room within, and crowning all the sloping lines of the immense pediment setting at defiance the right angles of the other buildings around, the new Exchange will have a scale of its own, at once so simple and impressive as to readily signalize it among its surroundings. There is another object lesson in architecture that may be learned from this Broad street facade. The illustration shows on the southern end of the building a recessed portion, several stories in height, which latter are indicated by pairs of plain square windows. The design of this part is in such marked contrast to the rest of the facade that it might be considered incongruous. That the designer was actuated by motives strictly truthful, however, will be realized when the plan of the building is studied. The jag in the contour of the lot provided a space outside of the Board Room just large enough for the elevators and stairs from Broad street and also for six mezzanine floors in the height of the Board Room. To design the exterior of this part of the building similarly with the rest of the front, as some of the competing architects did by simply adding another bay to the latter, would be equivalent to asserting that such part belonged to the Board Room, or, at least, was of equal importance. A further study of this elevation will reveal difficulties encountered

by the designer in adapting a facade to an interior radically different from the one for which that facade was originally intended. Judging from the exterior it might still be questioned if the logical position of the Board Room floor would not be behind the strongly marked string-course at the base of the colonnade. We have seen how this was impossible, owing to the discarding of the twenty-foot banking story, and the substitution of the interior pedestal course in its place, necessitating thereby the same relative position of the colonnade base outside. The matter was compromised by designing the row of balconies under the arched windows. These balconies now mark the position of the Board Room floor—not quite as strongly perhaps as the heavy, continuous string-course above might have done, but naturally and artistically. Another aesthetic question was involved in the design of the main entrance to the Board Room. As first planned these were to be in the recess and the elevation was designed accordingly. When finally and after a long struggle on the designers' part they were placed in the centre of the Broad street front, it was at once realized that the continuous monotony of the colonnade above forbade any pronounced accentuation of the details in the base. But truthfulness demanded that the importance of the main entrance be given some recognition. The three central openings were, therefore, slightly more enriched than the others and were still further emphasized by the stone steps leading to them.

Such, briefly told, is the story of the design for New York's most important commercial building. "Briefly told," for although much space has been taken in the telling, these pages are not a tithe of what might in all justice be written on the subject. Merely the main facts on both sides of the case have herein been set forth: on the one hand the evidence as contained in the client's needs, and on the other hand the architect's ways and means of providing therefor. The verdict must be left to the future. A year hence the building will have been completed. Should it fail in any particular to satisfy the expectations had of it, the cause of such failure will not have been foretold. But the proof of the pudding is in the eating.

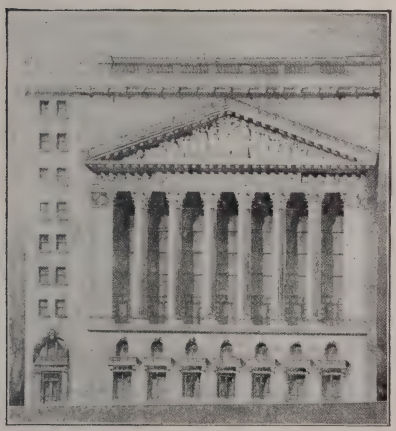
Percy C. Stuart.

TECHNICAL DEPARTMENT.

THE BUILDER'S RESPONSIBILITY

for the Construction of

The New York Stock Exchange.



THE NEW YORK STOCK EXCHANGE.

Building in New York has from the beginning been regulated by economic considerations. Ever since the city shed its colonial skin, and acquired metropolitan characteristics the work of the builder has been increasing in importance. In no other city in the world has so much capital been used in producing residences and structures dedicated to commercial and pleasure pursuits. The yearly cost of building in the city of New York amounts to more than the yearly cost of the food for its inhabitants. So the builder is prominent in the metropolitan field. The cause for this is not far to seek. The enormous increase in land values and the improvements made in building construction have turned the buildings erected thirty years ago into simple encumbrances. It is not an unusual thing in New York to see a handsome commercial building torn down to make room for a modern sky-scraper which will prove more profitable. While cities like Chicago are growing out New York is growing up. And as the height and value of the building operations increase the responsibility of the builder increases.

The class of buildings being erected to-day is so different from the character of the buildings of ten years ago that each one presents a special problem. The builder of to-day ranks with the engineer and architect. He must bring to bear on the difficulties which confront him a trained mind with superior powers of organization and fertility of resource.

As our building operations become more complex and expensive, new agencies must be employed to render them more effective. Only a few years ago the construction of a million-dollar building was regarded as a great undertaking, but there are numerous buildings in New York at present the cost of which exceeds $1,000,000 and a few whose completion involved the expenditure of several millions. With the increased cost of structures has come the necessity for more perfect mechanical appliances for handling materials, a more highly developed system of operating, and more effective capacity for handling men in large numbers. The problem of storing materials on a limited area is a serious one, for frequently the contractor has no space for this purpose, except that on which he is going to build, and the materials must be brought to the ground in such quantities as not to impede the progress of the work and yet there must be always enough materials to supply the demands of hundreds of busy workmen—a delicate problem for even a master mind. The modern builder is a general who consolidates and directs. His enemy is Time. The workmen are his army and their weapons are their tools, with their labor to shorten the campaign. The builder is neither architect nor engineer nor artisan. He is all three. He is an operator in the field of construction with a training that permits as occasion demands cognizance of the minutest details or a broad and general view of the whole operation.

It is often said that it is as easy to manage $1,000,000 as $1,000, and the frequent repetition has made many people believe it, but it is well to scrutinize these current sayings before accepting them at their face value. As far as the builders are concerned, not one would say it is as easy to erect a million-dollar building as one that costs only one thousand, aside from any question of responsibility. One of the most natural evolutions of the builders' trade is that the greater building operations are falling more and more into the hands of a few individuals or firms that have ability, reputation and resources.

The highest compliment that can be paid to a builder is that he should be sought regardless of cost, that work should be awarded him without competitive bidding; that the job should seek the man, and not the man the job. Such a compliment is worth more than a hundred laudatory expressions. It tells a complete story of faithful work, of honest endeavor and successful achievement. It is a volume in a nut shell. Such a compliment was recently paid to one of New York's builders.

After the plans for the New York Stock Exchange were finally accepted the question came up as to who should have charge of the construction. Some of the committee suggested that the work

be let to the lowest bidder, but this suggestion was not received favorably by the majority. They preferred to place the important work in the care of a builder whose achievements are accepted as the highest type of building construction.

The building committee of the Exchange were unanimous in choosing for this important work Charles T. Wills, and the architect, George B. Post, heartily endorsed their selection. The new Stock Exchange Building will, when completed, represent an expenditure of $3,000,000, and its construction will embody the highest achievements of modern engineering skill.



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Onondaga County Savings Bank, Syracuse, N. Y.	R. W. Gibson, Architect.
St. Luke's Hospital	Ernest Flagg, Architect.
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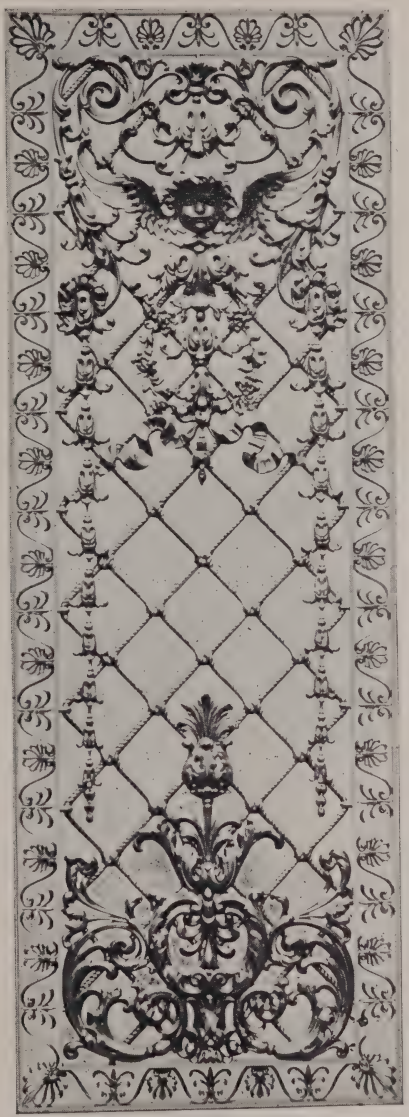
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Attention is respectfully called to the interesting article, entitled

American Art in Bronze and Iron

By KATHLEEN GRAY NELSON

In JULY NUMBER of MUNSEY'S MAGAZINE

with illustrations of work executed by

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The
Architectural Record.

VOL. XI. OCTOBER, 1901. No. 2

THE MODERN RAILROAD STATION.—No. I.

The Quai d'Orsay Terminus.

THE time is gone when a railroad station was a mere utilitarian edifice, planned exclusively to meet the requirements of the service. With the growing taste for luxurious things railroad stations have become most comfortable places. In the spacious waiting-rooms the tired passenger can recline in a soft arm-chair, unless he prefers the enticements of a sumptuous refreshment room, where his eyes can rest upon paintings by members of the Academy and where dinners of five or six courses are served. Immense glazed halls cover the platforms, which are reached through well-lighted subways. Adjoining the station there is a first-class hotel, so that in a few steps one passes from the car into one's bedroom and vice versa. Our modern railroad depots also have handsome exteriors. The necessity of suiting the convenience of the passenger has obliged the companies to bring their termini as near the center as possible. Consequently, being now situated in the rich districts, the stations contribute to the beauty of the capital; they have become monuments, and rival the national palaces, the great hotels and the museums. The immense glazed roofs extending behind the ornate fronts alone indicate the true utilitarian character of these structures and prevent confusion.

The recently built Quai d'Orsay Station in Paris exemplifies better than any other the transformation of which we speak. The Orleans Company, which has erected it, had a depot far away in the east of the city. To reach it from the fashionable districts meant a drive of three-quarters of an hour. There seemed to be no remedy for this serious defect. Available ground in the center of Paris is scarce and extremely dear. Besides, the municipal authorities, being anxious to preserve the beauty of the capital, forbade the construction of any railroad above ground. It appeared as if the Orleans Station was doomed to remain forever at one extremity of the city, near the fortifications on the east side. However, a solution of the problem was found. In the very heart of Paris, on the

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FIG. 1.

QUAI D'ORSAY STATION.—THE LONG RAILROAD FACADE FACING THE QUAI D'ORSAY.

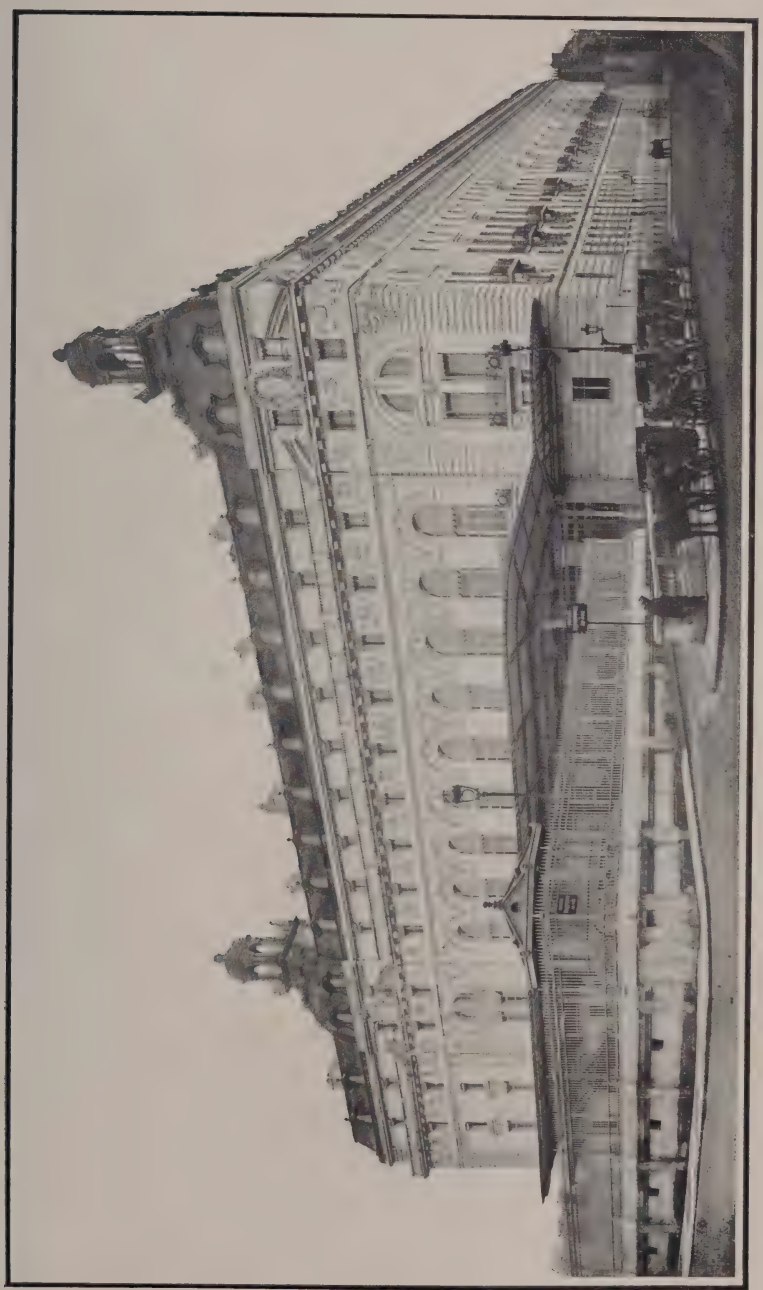


FIG. 2.

QUAI D'ORSAY STATION.—GENERAL VIEW OF THE BUILDING, SHOWING HOTEL FACADE.

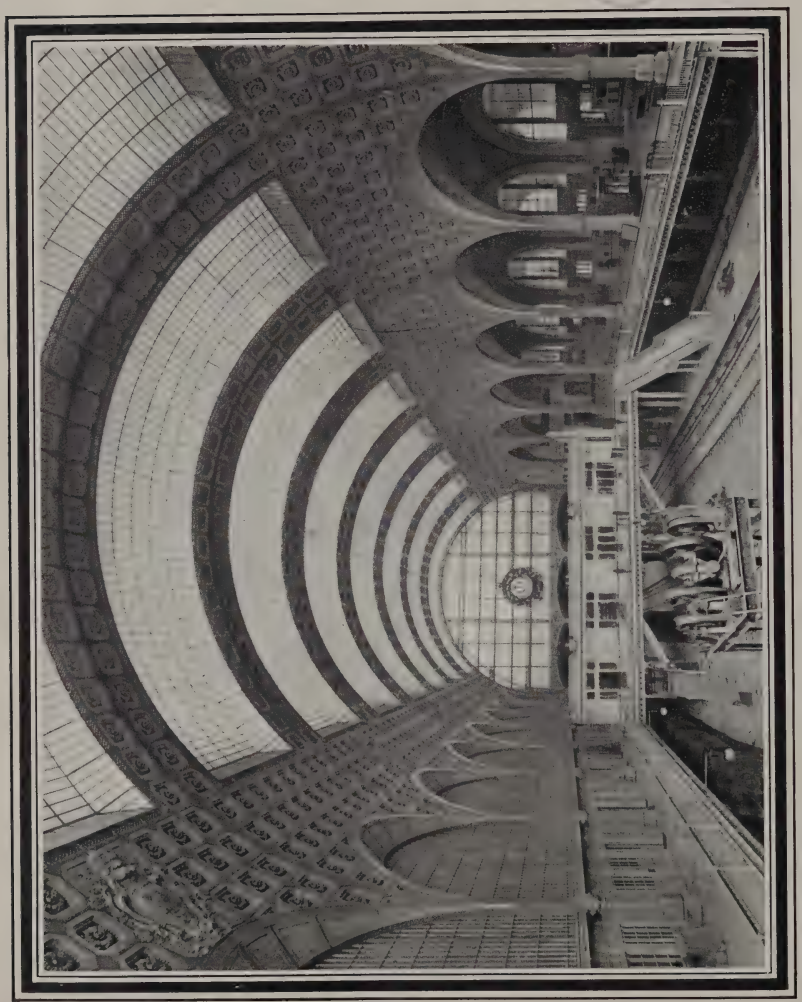


FIG. 3.
QUAI D'ORSAY STATION.—INTERIOR OF STATION.
(SEE FIG. 4.)



FIG. 4.

QUAI D'ORSAY STATION.—SHOWING IRONWORK IN PROCESS OF CONSTRUCTION (SEE FIG. 3).

south bank of the river, facing the Tuileries and only a few minutes' walk from the Louvre, the Place de la Concorde and the Palais Bourbon, there was a large rectangular piece of ground covered with ruins. These ruins were the remains of the old Imperial Cour des Comptes (Audit Office), which was burnt by the insurgents during the Commune, in 1871. For nearly thirty years the remains of this splendid building stood in the center of Paris, a mass of crumbling walls, with gaping holes where windows had been. The roof and the interior had been utterly destroyed by the fire. The only things spared were some fine frescoes by the great painter Chasseriau. These were exhibited at the Centennial Exposition of 1900. I appeal to all Americans who have lived in Paris, and especially to those who have studied at the Ecole des Beaux-Arts, to say whether they ever saw anything more picturesque on the banks of the Seine than those ruins of the Cour des Comptes; those red tones acquired by the stones under the action of the heat; those walls, made 2,000 years older looking by the fire; those arches become antique; those columns and capitals seemingly belonging to another age. An astonishing variety of vegetation had sprung up amidst those ruins—fig trees, planes, beeches, shrubs and plants of various kinds, whose seeds, mingled with Paris dust, are carried hither and thither—had found a rich soil in this abandoned spot; vigorous foliations had thrust themselves through the yawning windows, while magnificent shoots displayed their vivid green against the patina-covered walls. Assuredly no place in Paris presented a more striking mixture of life and death, of new and old, of civilization and nature, than those wonderful ruins of the Cour des Comptes, regarding which one of our contemporary writers has justly said that in our day he preferred "cooked architecture to raw." Birds built their nests there, and were far more at peace than are those whose home is in the public parks. In the spring one heard there the cooing of turtle-doves, and all the year round the croaking of crows. Strange noises were heard there, and it used to be said that the cats had returned to a wild state in that wilderness, and that the paradoxical concierge of those paradoxical premises dared not quit the little hut which had been put up for him between two walls.

But the picturesqueness of those ruins was a standing offense to the city authorities, and after long discussion as to the means of utilizing the ground they finally accepted the proposals of the Orleans Company, which wished to bring in its terminus to that point.

The enterprise was a considerable one. It was necessary to build an underground road three miles in length along the river embankment, and to build it in such a way that it should be safe from over-

flows of the Seine. However, while fully guarding against this danger, it was found possible along the whole distance to make openings in the external wall looking upon the river at a height of one meter above the level of the highest floods ever known. By this means the railroad is well ventilated throughout its entire length. For the portion of the journey inside the city electric engines are employed. These are hitched on at the old station, taking the place of the steam locomotives, and thus the trains are hauled, without noise, smell or smoke, to the new terminus on the Quai d'Orsay. This is a great improvement, and, as we shall presently see, it has had a direct influence upon the architectural designs for the station itself.

The piece of ground upon which the station was to be erected presented certain difficulties. It was sufficiently long, but somewhat narrow. Moreover, the tracks were below the level of the ground. The architect, M. Laloux, taking advantage of these features, was able to provide a more spacious station than would otherwise have been possible. The waiting-rooms, baggage-rooms, ticket-office and refreshment-room are all situated on a level with the street. Short flights of stairs lead to the basement, each staircase corresponding to a platform. As a few of the tracks are underneath the thoroughfare which runs between the station and the Seine, the sidewalks of this road have been paved with opaque glass. Other tracks are situated exactly below the floor of the station, while others again are in the open air, if one may say so, or, rather, are beneath an open vault, as is shown by one of the illustrations.

The transport of the baggage inside the station, between the basement and the ground floor, is effected in the most ingenious manner by means of an apparatus designed on the principle of the "moving sidewalk." A wide endless belt of leather runs on an inclined plane around two drums, one of which is placed in the basement and the other in the baggage-room above. These drums, which are driven by electricity, are only started at the arrival of the trains. The trunks are discharged directly from the baggage-car on to the leather belt, which carries them to the upper floor. This has done away with the encumbering hand-trucks. In a few minutes the car is cleared and the trunks are ranged in the baggage-room. Fig. 7 shows how this apparatus is set up in the Quai d'Orsay Station.

Fig. No. 3 represents the great hall, with its glazed roof, which covers the greater part of the depot. Here iron stands forth in its true colors. No attempt has been made to hide iron columns beneath a casing of imitation marble, or to make a style colonnade out of iron piers. The hall, as can be seen, is boldly conceived. We



FIG. 5.

QUAI D'ORSAY STATION.—SHOWING DECORATIVE TREATMENT OF IRON BAYS.



FIG. 6.

QUAI D'ORSAY STATION.—SHOWING FRESCOES AND DECORATIVE TREATMENT OF INTERIOR.

have purposely chosen two views, one representing it in course of erection, when only the ironwork had so far been put up, and the other showing it in a complete state, with its glass and decoration. In the first of these views (No. 4) it seems wildly complicated and entangled. The finished work, on the contrary, proclaims that it was the architect's wish to produce a decorative effect. All the part of the tympanums between the arches is filled by coffers, each similarly ornamented with a rich rose. From distance to distance in the hall a double band of roses passes over the vault and falls on the exterior wall, which is pierced also through and through and is formed solely of iron piers supporting the truss-work. The iron arches between the two bands of roses appear as they actually are, and the rivets fastening them are visible.

It is certain that there was reason for glazing the whole of this immense hall, and that the bands of roses accompanying each of the big transverse arches emphasize the impression of strength. Light enters in abundance from all parts. Thus this hall consists of iron, decorated tiles, and glass. Each of these three materials plays its natural role: there is no disguise or deception. The general effect is in light colors, and is very pleasing to the eye. It is a case of a definite conception resolutely carried out. The deep relief of the roses denotes a sound notion of decorative effect. It is true that one might take exception to the use of that antique rose for such a modern purpose. We are also inclined to think that it would have been better to look for newer forms than that Roman-like coffer for a twentieth-century railroad station, but alas, all present-day architecture is of the same sort, and as things are going, we are a long way from the end of it.

The view of the unfinished structure also shows how the architect has conceived the small cupolas in the room which precedes the great hall. Here again an iron framework is filled in with large squares of decorated tiles, of which Fig. 5 shows the arrangement and the ornamental detail.

My description of the decorative part of the great hall would not be complete if I failed to mention the two large canvases at the two ends of the entrance-hall, one representing the sea shore at Biarritz, and the other (Fig. 6) the celebrated banks of the Loire. They are both painted by one of our best-known artists, M. Cormon, Member of the Institute.

We give two views (7 and 8) of the clock, which is located at the bottom of the hall. It has been executed by MM. Kulikowski, ornamental sculptors, as has also the whole of the decorative sculpture of the station. The model is exceedingly rich. We like the artists' conception of relief—the defined masses and the deep shadows. The drawn figure of a man gives the scale of the work.

The hands are six feet long. The foregoing illustrations show what an important part is played by decorative sculpture inside the Quai d'Orsay Station. It should be observed here that this has been made possible by the exclusive use of electric traction, and the total absence of coal smoke. What would become of M. Cormon's paintings, the coffers and their rose-work, the garlands and the deep carved work on the clock, in an ordinary railroad depot where smoke and dust cover everything with a coating of filth? These remarks having been made, we must add that the architect and the sculptors have profited too freely by the liberty accorded to them to decorate the interior of the structure. The decoration is profuse; there is too much of it. Every tympanum, every keystone, every doorway and every bay has been the subject of embellishment of some kind or other. There are escutcheons of cities, festoons, bandelets, dentils, beads, ovolos, rose-work, shields of all shapes, consoles and modillions, lions' heads and bows of ribbon, oak-branches and laurel-leaves. There is positively too much decoration. One looks in vain for a plain piece of wall, and sighs after a fine, unadorned arch; but such a thing is not to be seen within the Quai d'Orsay Station, and, as we shall show, it is not on the outside that we shall find it.

The Quai d'Orsay Station comprises not only the railroad depot but a hotel as well. Hence we find the exterior treated in two entirely different manners. Looking on to the Quai there is one of the lateral faces of the station proper, and behind there is the hotel. The result is that there are two fronts of an opposite character. Fig. No. 1 shows the long front facing the Quai, a series of wide bays between two corner pavilions whose roofs recall those of the neighboring Louvre. Each pavilion has a monumental clock, which is decidedly a characteristic feature of the station. The bays are separated by two projecting pilasters, which support a cornice with ressauts. Above the cornice there is a much-adorned attic, on which are immense escutcheons of the different cities situated on the Orleans Railroad, alternating with statues which are still more monumental. I consider that there is an absence of logic in this arrangement. The pilasters, which are the solid parts of this façade, rise in vain; the pile is further accentuated on the attic—and all to support what? A ball. It is an instance of the mountain bringing forth a mouse. On the other hand, all the big empty spaces are surmounted by enormous blocks—statues or escutcheons, the result being that the voids have great solids weighing upon them, while the solid parts of the ground floor uphold nothing. This jars both on the eye and on the mind, two things which in architecture are inseparable.

Another feature which we cannot refrain from criticising is the



FIG. 7.

QUAI D'ORSAY STATION.—SHOWING MOVING BAND FOR HANDLING BAGGAGE.

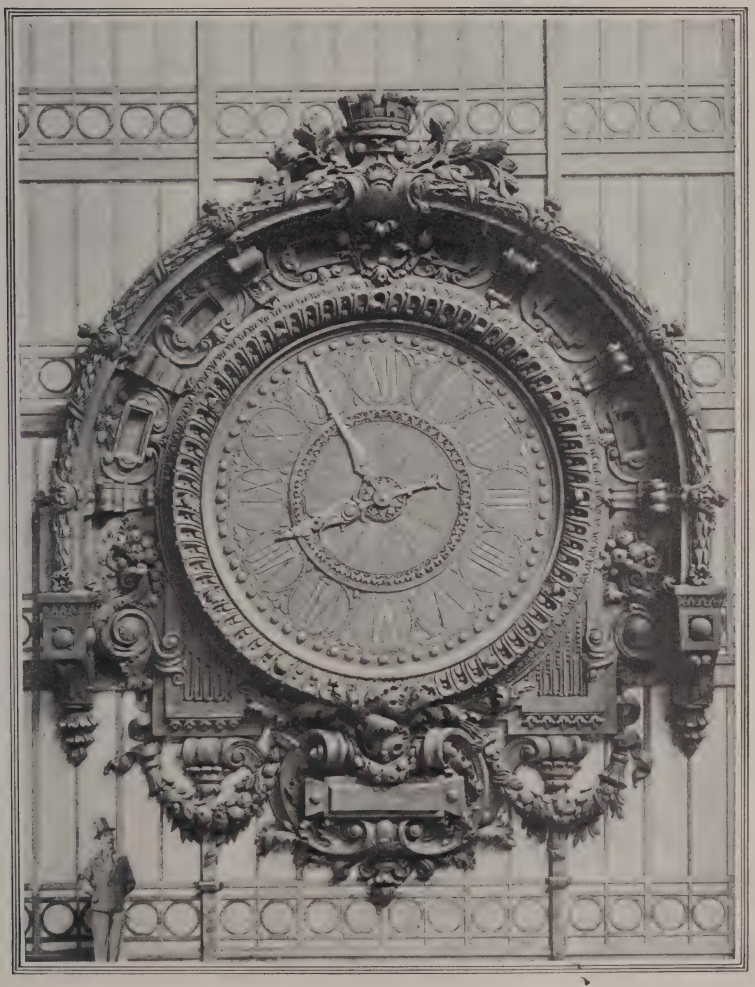


FIG. 8.

QUAI D'ORSAY STATION.—SHOWING DECORATIVE TREATMENT OF CLOCK.

elevation of the roofs of the terminal pavilions, which is insufficient, and the unfortunate obelisk crowning them, which loads them unnecessarily without carying them to a proper height.

With these reservations, and putting aside for the moment the ornamental sculpture, we are of opinion that the general arrangement of this façade is satisfactory and well adapted to its purpose. One is favorably impressed by those large bays, wide and high, with which the whole front is pierced. It is certainly an excellent plan of façade for a railroad station. The facilities for ingress and egress are ample, there being half a score of doors; and there is plenty of air and light in every part. Comparing this terminus with the other stations in Paris, and those abroad, one is struck by its superiority.

From the western end of the façade on the Quai we perceive the windows of the hotel, which is called the Palais d'Orsay. Fig. 2 shows the whole of the hotel front, on the Rue de Bellechasse, with return on the Rue de Lille. The entrance is on the Quai d'Orsay. The ground floor on the Rue de Bellechasse serves as the arrival courtyard of the station. A big marquee covers the place of arrival and prevents the noise of the vehicles from ascending to the upper floors. On the façade the central arches are the windows of the large saloon of the restaurant, the rest being taken up by smaller saloons and bedrooms. Here again the two pavilions with roofs à la Mansard are lacking in elevation. On the other hand the chimneys are neither dissimulated, nor monumental, and this is a great pity. In the case of the Louvre hard by, a distinctly decorative effect was obtained from the inevitable chimneys. Furthermore, it is impossible not to condemn the wretched cut-frontons on the balcony floor of the two pavilions. These frontons are the most unfortunate and most controvertible inventions of the baroque school. Shall we never be able to get rid of the encumbering inheritance of the Italian Decline?

The hotel has been very carefully isolated from the station to which it is attached. Glass partitions completely cut off the station hall from the hotel building, as is seen in Fig. No. 3. Besides, it should be remembered that steam engines are not employed, and that consequently the station is less noisy than is usually the case.

Two illustrations lead us insensibly from the architecture to the decoration. One (Fig. 9) gives a view of one of the large pavilions of the station front, with the first windows of the d'Orsay Palace Hotel. Architecturally, it is a fine example of stone construction. One is struck by the relief of each member of this façade—piers, pilasters, archivolts (each stone of which is accentuated), string-courses and cornices. The layers of stone can be read at a distance. Everything is strongly salient, and the modillions are specially so.

The other view (No. 10) shows in all its amplitude one of the large bays, which, I repeat, are most happily imagined for a station façade.

Both of these illustrations permit of an examination of the decorative statuary of the Quai d'Orsay Station. It is necessary to remark in the first place that it is extremely fine work, and that MM. Kulikowski, who were entrusted with it, are true artists in the sense which is attached nowadays to the word. It could not possibly have been executed with greater care, conscientiousness, firmness and delicacy. Their foliages are, when requisite, studied from nature; their garlands are as full and round as could be wished. Notice in particular the detail to scale, Fig. 11. Everywhere the statuary stands out in bold relief from what remains of the walls. The lettering, too, testifies to epigraphic talent. Not a single point has been neglected; everything has been done with art and with enthusiasm by men who thoroughly know their business and possess taste.

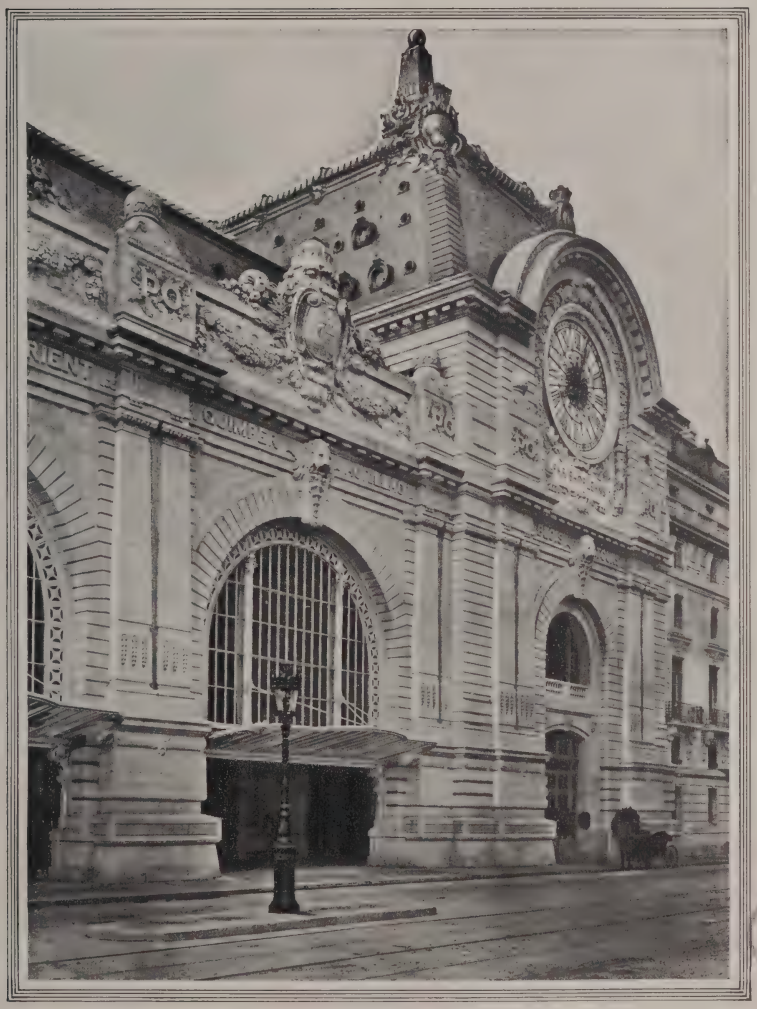
And yet—and I am now the more at ease that I have freely praised all that is laudable in this decoration—the decorative part of the Quai d'Orsay Station, brilliant as it may be, is intrinsically bad, and instead of embellishing this façade, spoils it. Once more I say that the fault does not lie at all in the quality of the ornamentation, but in the fact that the ornamentation itself has no raison d'être. Our argument may be summed up thus: The richest and finest decoration, if it has not architecturally a purpose, if it does not express by its beauty the functions of the structure upon which it figures, will be bad. As an illustration of what we mean we will cite the station before us, as it affords the most striking example, among many others, alas, of decoration applied to an edifice without thought. I have already pointed out how absurd it was to load that part of the wall above the arches with enormous statues, whilst the piers and pilasters supported nothing. This is contrary to common sense. But, passing now to the statues themselves, we may ask with equal reason what those colossal masses have to do on that attic. I know very well that this bad habit is an old one, and that the whole of the French School, a few architects excepted, have used and abused this factitious manner of ornamenting their palaces. They have thought that they were producing richness, pleasing to the eye, by so doing, but as a matter of fact they have merely succeeded in destroying the principal lines of the edifice, those which should stand forth clearly, and in producing confusion instead of light.

So is it with the façade of the station; a luxurious ornamentation covers and stifles it. I forget what critic it was who jokingly said that when an English architect was at a loss for a means of



FIG. 9.

QUAI D'ORSAY STATION.—AN ENTRANCE TO STATION—ONE OF THE LARGE PAVILIONS.



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FIG. 10.

QUAI D'ORSAY STATION.—SHOWING TREATMENT OF BAYS AND PAVILIONS.

joining two walls or toning down an awkward angle in a country house, he said: "No matter, we will cover this part of the building with ivy, which will have the most picturesque effect." In France we use a similar subterfuge. Instead of covering the structure with growing ivy, we put on a lavish amount of sculptured decoration. The effect is the same; the edifice itself disappears. One looked for fine lines, well constructed; one finds flowers and festoons, and masks, and lions, and women—of edifice not a vestige.

It would be useless to labor this point. Let the reader look at the collection of photographs accompanying this article, and he will see one of the most glaring defects of the major part of the French School, namely, the abuse of statuary, so-called decorative, which has not the remotest relation to the decorative statuary of the great architectural epochs—the Greek and the Gothic. In those days the smallest ornament had a meaning, a justification, in the general scheme, a raison d'être. In our time all these flowers are put upon the edifice at hap-hazard, and instead of ornamenting it, mar it. I saw the Quai d'Orsay Station in course of erection, before the statuary had been put in place, and really the scheme of this façade, its big, bare bays between the two pavilions, the fine treatment of the stone, and those robust piers, all charmed me. There was something clear, strong, logical and pleasant about the structure. But alas, I reckoned without the fashion. When the building operations were finished, the mason gave place to the sculptor, and the result at the end of a few months was disheartening.

It would be well if a good many French architects cultivated a quality which, in numerous other domains, is truly French: I mean sobriety.

I have gathered together, in termination of this article, a few photographs of the interior of the d'Orsay Palace Hotel. The first one (Fig. 12) shows the restaurant saloon, on the Rue de Bellechasse. It almost goes without saying that the apartment is in style. The ceiling and door-piers are from the brush of M. G. Ferrier, another notable painter. The present fashion, I am glad to say, is for lively, light-toned pieces. We have finished with sombre wainscotings, stained oak and walnut and dark-colored hangings. Next is the ball-room, which is also to be used for big banquets (Fig. 13). It is of an extreme, in fact a superabundant richness, but here the opulence is more appropriate. The gildings and the marble rival each other in splendor. The photograph speaks for itself. I will simply single out the garlands of flowers with electric lamps interspersed. At night, when a festivity is going on, the effect of these is exceedingly brilliant, and graceful as well. Finally, we reproduce two details (14 and 15) of style ornamentation of the in-

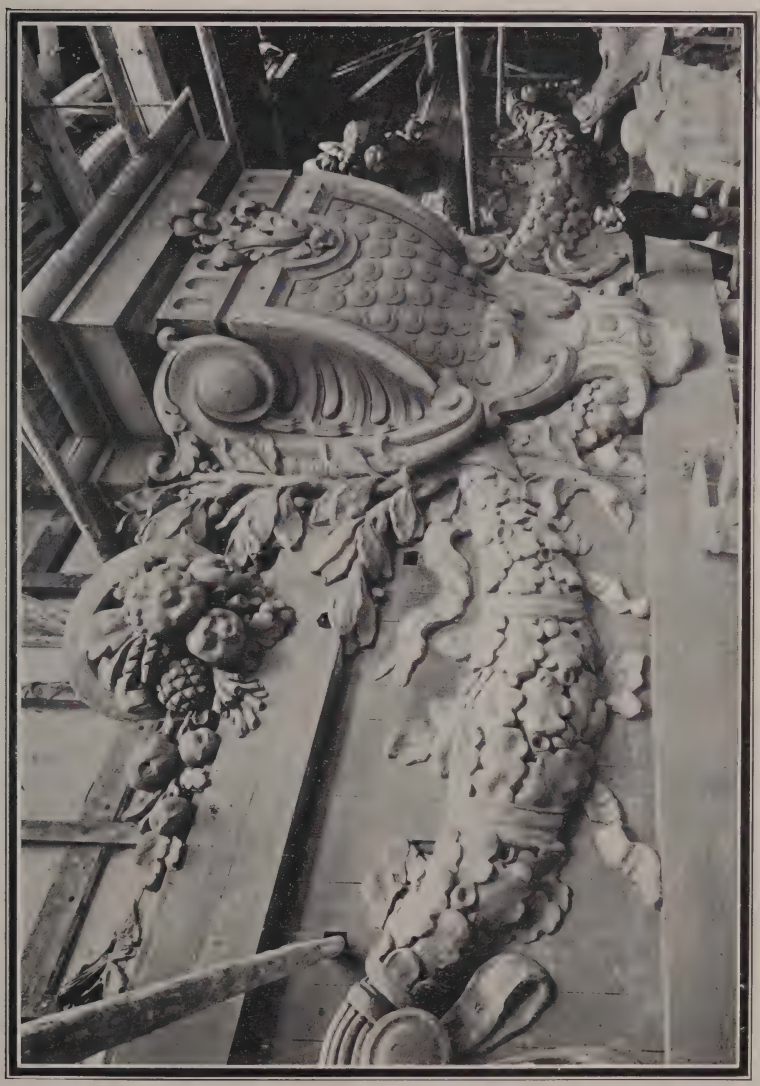


FIG. 11.

QUAI D'ORSAY STATION.—A DECORATIVE DETAIL.



FIG. 12.

QUAI D'ORSAY STATION.—THE RESTAURANT OF THE D'ORSAY PALACE HOTEL.

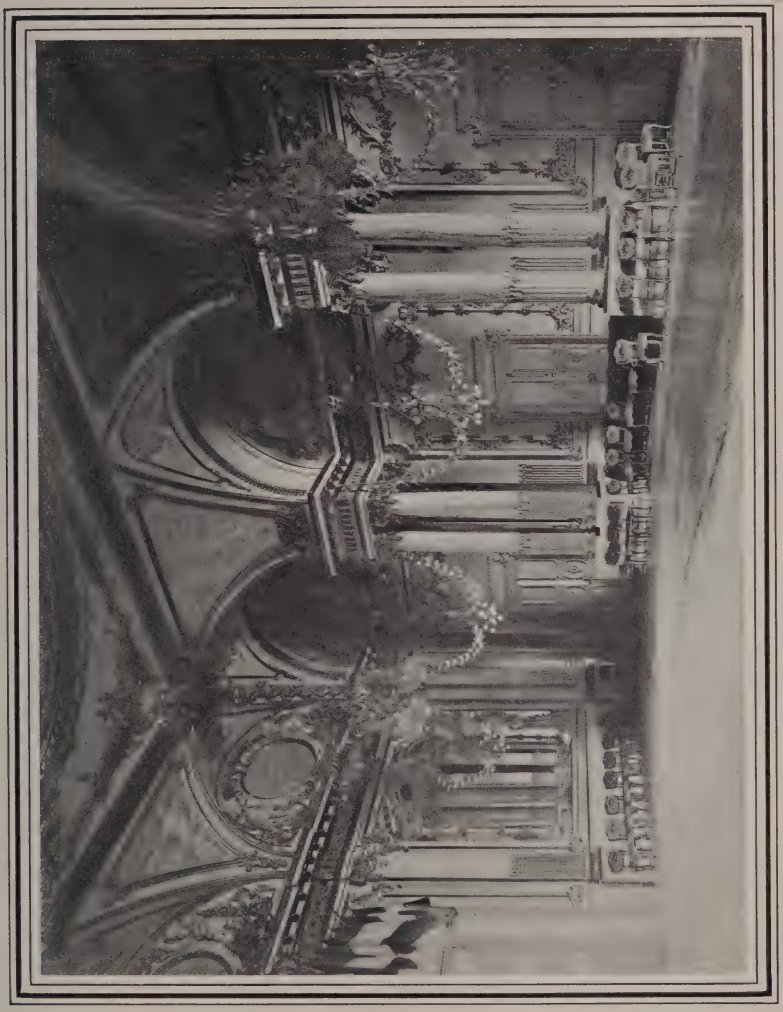


FIG. 13.

QUAI D'ORSAY STATION.—THE BALLROOM OF THE D'ORSAY PALACE HOTEL.



FIG. 14.
QUAI D'ORSAY STATION.—A DECORATIVE DETAIL.



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FIG. 15.

QUAI D'ORSAY STATION.—A DECORATIVE DETAIL.

terior of the hotel, showing how carefully even the minor parts of the decoration have been treated.

There is no dearth of sculptors, nor of ornament-makers; what is lacking is an architect who knows how to utilize the resources of their art, and who will not let himself be stifled under their weight. What we need is a conception of ensemble, and a just view of the relations which existed in the good old times between architecture and decoration.

I persist in believing that our architects are wanting in historical culture. In the schools of the past they see nothing more than inexhaustible mines whence to extract motives. Of the styles, they possess only an anecdotal knowledge, if I may be allowed to say so. They do not realize that a style is an organism, a whole, which cannot be mutilated without suffering or without its beauty disappearing. Our architects, in their desire lavishly to ornament the edifices which they construct, make the same mistake that a painter would make who should paint a woman with three or four legs, on the ground that the two legs of the model before him were superb and that one could not have too much of a good thing.

Jean Schopfer.



CAPITAL FOUND AT POMPEII.
Photographed by Reginald Lindsey Sweet.

THE FIRST GOVERNMENT ARCHITECT.

JAMES HOBAN, OF CHARLESTON, S. C.

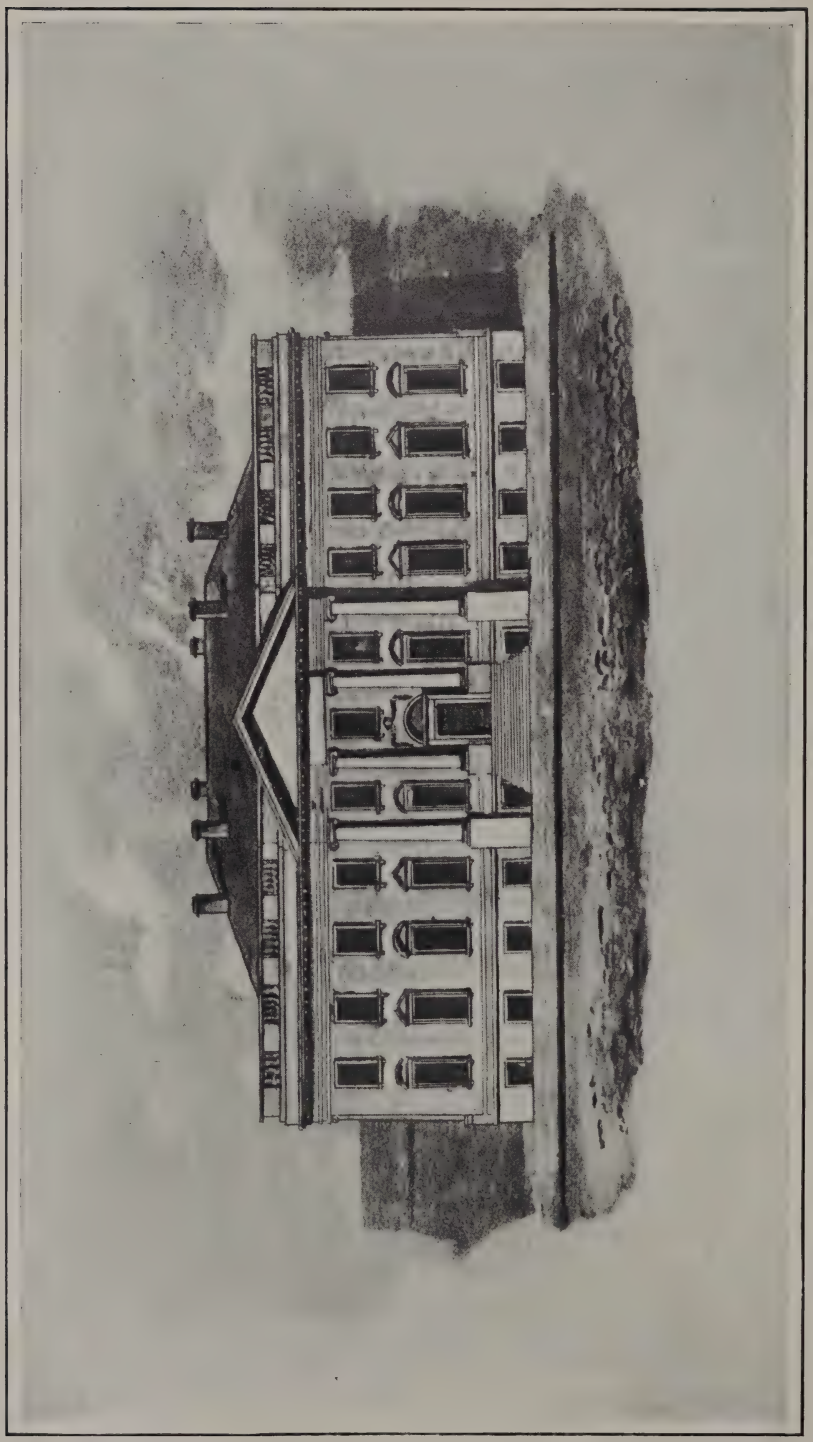
IN considering the events immediately connected with the occupation of the permanent seat of government of the United States one hundred years ago, we should not overlook certain antecedent facts quite as important and indeed indispensable to those that followed.

The Congress of the Confederation conceived the idea of a territory under the exclusive jurisdiction of Congress. They kept the subject well to the front in all their parliamentary deliberations. The Constitutional Convention of 1787 took it up and made the project a fundamental part of the machinery of the new government. Therefore immediately after the installation of the Vice-President, the organization of the two houses of Congress, the inauguration of the President and appointment of the Chief Justice, the question of the location of the Federal territory was revived as the first measure to give permanency to the form, under which the three coordinate branches were then formulating a system of national administration.

A study of these parliamentary contentions affords a very practical illustration of the not over disinterested motives then in evidence, which have been forgotten in the progress of time.

After about fifteen months of the bitterest debate, during which the disruption of the union, not then out of its swaddling clothes, was repeatedly threatened, and after an exhibition of log-rolling worthy of a modern River and Harbor Bill, the first Congress finally settled the question at its second session. New York was deprived of the honor for which she had struggled so hard; the associations of Philadelphia with the birth of the nation were ignored, except to establish there the temporary seat of government; and a permanent national capital to be ready by the first Monday in December, 1800, was provided on the Potomac River.

In bringing about this final result, after seven years of discussion, President Washington was conspicuously instrumental. His personal preference naturally favored the region of his own home. But the manipulation of the political end of the bargain which led to the reconsideration of the already adopted and preliminarily surveyed site on the Delaware opposite Trenton, New Jersey, and the substitution of that which we recently commemorated in the matter



THE EXECUTIVE MANSION, WASHINGTON, D. C., IN 1800.—BEFORE THE NORTH PORCH WAS ADDED.

James Hoban, supported by credentials of ability and experience, among them one from Henry Laurens, who had been a member of the Congress of 1775 and one of the negotiators of the peace with Great Britain.

In the examination of plans for a Capitol and a President's House, Dr. Thornton and Stephen Hallet received the same award, $500 or a medal for the Capitol. The plan for a President's House submitted by James Hoban answering every requirement of design and adaptability, was accepted and received a like premium. In the consideration of these plans Secretary of State Jefferson took an active interest. He not only produced the drawings of celebrated public buildings of Europe which he had gathered, but suggested as a general basis of selection that the Capitol should reflect the style of some model of antiquity and the President's House should be modern in design, in which he was sustained by Representative James Madison who was also present. The plans were examined at Georgetown on July 15-16, 1792. The same month James Hoban was employed at 300 guineas a year as architect and superintendent.

On October 13th following, the Federal Commissioners accompanied by the Freemasons of Alexandria and Georgetown, Architect Hoban and the inhabitants of Georgetown, Alexandria, Funkstown, Hamburg, Carrolton and the surrounding region marched to the site selected, and with appropriate ceremonies laid the corner stone of the present structure, which was the first public building commenced. The absence of President Washington on that occasion was unavoidable, owing to the demands of public business at Philadelphia. He inspected the site, however, with Mrs. Washington three days before on his way north and gave directions to the Commissioners, Major L'Enfant, the Engineer, and James Hoban, the architect and superintendent. In order to correct the persistently repeated statement that President Washington was present on the day of the ceremonies, it is only necessary to quote the following from Dunlap's American Daily Register of Philadelphia, Monday, October 15, 1792: "The President of the United States, his lady and family arrived here on Saturday afternoon (October 13th) from Mount Vernon."

It is not necessary to recount the perplexities which had to be faced during the period between the appointment on Jan. 22, 1791, of the three Federal Commissioners to superintend the affairs of the city followed two days later by the President's first Proclamation, directing them to "lay down the four experimental lines of boundary," and the first meeting of Congress in the unfinished Capitol November 17, 1800, and the occupancy of the "President's House" the same month by President and Mrs. John Adams. It

is true the mansion was far from finished at the period recently commemorated, which was no fault of James Hoban's; but it was wholly completed by him subsequently and was also repaired from the original drawings under his direction (1815-16) after the burning of the interior by the British in 1814. The south portico was added in 1822 and the north portico, which was not his, in 1829.

Of all the engineers and architects employed during the nine years and ten months struggle, the name of L'Enfant, first engineer, and Hoban, the first architect, alone merit distinctive commemoration. The plans which they designed in their respective lines of duty and which were adopted and carried into execution have met the government's requirements during a century of national expansion from a Union of fifteen to forty-five commonwealths besides territories and colonial dependencies, from a national area of 830,000 to 3,840,000 square miles, and from a population of 6,000,000 to 76,000,000.

The original L'Enfant plan of the city will accommodate at least double the present resident population. The Hoban plan of the Executive Mansion has on the other hand, reached the limit of its capacity to meet the official, social and domestic necessities of the President. Although James Hoban was at first employed to make plans for the President's House, his excellent taste and sound judgment as an architect and practical skill as a builder so impressed the President that his services were in general demand. On April 5, 1793, the President approved of the Capitol plan submitted by Dr. Thornton. Later Mr. Hoban was called to consult with Secretary Jefferson, Mr. Hallet and others about its adaptation. On July 25, 1793, the President by letter informed Mr. Hoban that the foundations would be begun on the plans as exhibited by Mr. Hallet. At the laying of the corner stone on September 18th following, which was under the present Law Library, President Washington, in concert with the Grand Lodge of Maryland and the lodges under its jurisdiction and Lodge 22 from Alexandria, Virginia, personally conducted the ceremonies.

In the list of names placed in the corner stone, that of James Hoban precedes that of Stephen Hallet as architect. Owing to the defections in the work the first contractors were dismissed and the Superintendence of the Capitol together with the President's House was turned over to Mr. Hoban. Under these instructions he laid the foundations of the old north and south wings and center of the original structure. Owing to the objections of Hallet to the Supervision of Hoban as Surveyor or Superintendent of Public Buildings, a controversy was cut short by his retirement in 1794, leaving Hoban in sole control.

In 1797 Hoban was made Superintendent of all the Executive

Department buildings to be erected and known as the northeast (State), southeast (Treasury), northwest (War), and southwest (Navy), these points of the compass representing their relations to the President's House as the center of the group.

It may be interesting to mention that early in 1800 the architrave, frieze, cornice and roof of the original north wing of the Capitol were finished. The Supreme Court and offices and Law Library were fitted up for the two Houses of Congress. It was here that Congress first met on Nov. 17, 1800. The President's House, which was first occupied by President John Adams, his nephew and private secretary, William S. Shaw and later in November by Mrs. Adams joining them, was far from completed; the present private portions of the structure, however, were habitable.

But for the energy of James Hoban in carrying the public buildings forward in face of insufficient funds, scarcity of labor and other obstacles almost insurmountable, the second session of the Sixth Congress would have been obliged to meet in the open air, and the President and his family might have found lodgings in Georgetown. In 1800, upon the arrival of Congress and the President, the only person left connected from the beginning with the work of the city to welcome them was James Hoban. It may be added that this faithful officer during the next two years completed the four original Executive buildings on the sites occupied by the Treasury Department on the east and the architectural group of the State, War and Navy Departments on the west of the Executive Mansion.

James Hoban, a native of Ireland, settled in Charleston, South Carolina, before the American Revolution. He had gained local repute in the colony and state of his adoption as a builder of plantation houses. The chaste architectural features of the official residence of all the Presidents since the elder Adams were personally inspected, admired and approved by General and Mrs. Washington but a few months before the General's death. It can therefore be truly said that the Executive Mansion as its stands today is associated with every President of the United States. The President's House when erected was the finest structure of the kind in the Western Hemisphere. Today it loses none of its reputation for simple effectiveness in comparison with the modern ornate adaptations of the classic styles.

The names of L'Enfant and Hoban are as indelibly impressed upon the present magnificence of the Nation's Capitol today as they were upon the beginnings amid the cornfields of the former proprietors of the soil. A critical study of James Hoban professionally from the examples of his art as we find them carried out in the Executive Mansion, reveals a delicate sense of the beautiful

in decoration and of form and proportion in design. His interpretation of the classic orders was aesthetic as well as scientific. In every respect his work equals and in some features surpasses the designs of other colonial architects. This may be said of the Executive Mansion. In it we find the richest and purest forms of the adaption of the classic styles during our colonial or Georgian period. In closely studying his capitals where the sense of the order is generally crystallized, Hoban displayed sentiment as well as art by introducing the American rose as a crowning feature in the center of the Grecian Ionic. The volutes, egg-and-dart and bead, all partake of the deep and clear cutting shown in nature by the setting of the leaves of the rose.

The base rectangle or ground plan, height of first story, and of the order, seem to have been worked out after careful study and preparation. The number thirteen figures conspicuously in much of the work and seems to have been the first instance of the significant and historic number being used in architecture. In comparing and drawing out the base, plaster, shaft and capital, the thickness of walls seemed to correspond with their development in plan or section. The entablature and balustrade are well designed and constructed, and are in better harmony than most work of that day. The placing of the corner brackets and dentils is most ingenious and interesting. The main entrance doorway and trimmings, and the south, east and west central windows are beautifully proportioned and designed. The small columns found by these openings are more beautiful than would be expected, and if drawn out in detail by any good artist in the present school of rendering they would not only be a surprise but would show most beautiful work both in designing and in execution on the part of the original architect.

His interior decorations are also artistic in conception and harmonious in execution. The mouldings, trimmings, baseboards, panels, window frames and shutters all give evidence of most careful attention to minute detail. Some of the smaller mouldings are particularly chaste and might well be copied for style even in comparison with the best types now in use. Some of the old hardware still may be found in service and is of special interest and value, as much of it was hand-made probably after Mr. Hoban's designs. Of course much new hardware has been added as occasion required.

These conclusions have been reached after a careful examination, and measurement of Mr. Hoban's work, from the applied forms in the building itself under direction of Col. T. A. Bingham, Corps of Engineers, U. S. A., who is in charge of the Office of Public Buildings and Grounds, especially of the Executive Mansion. This office is the oldest under the government, having been established

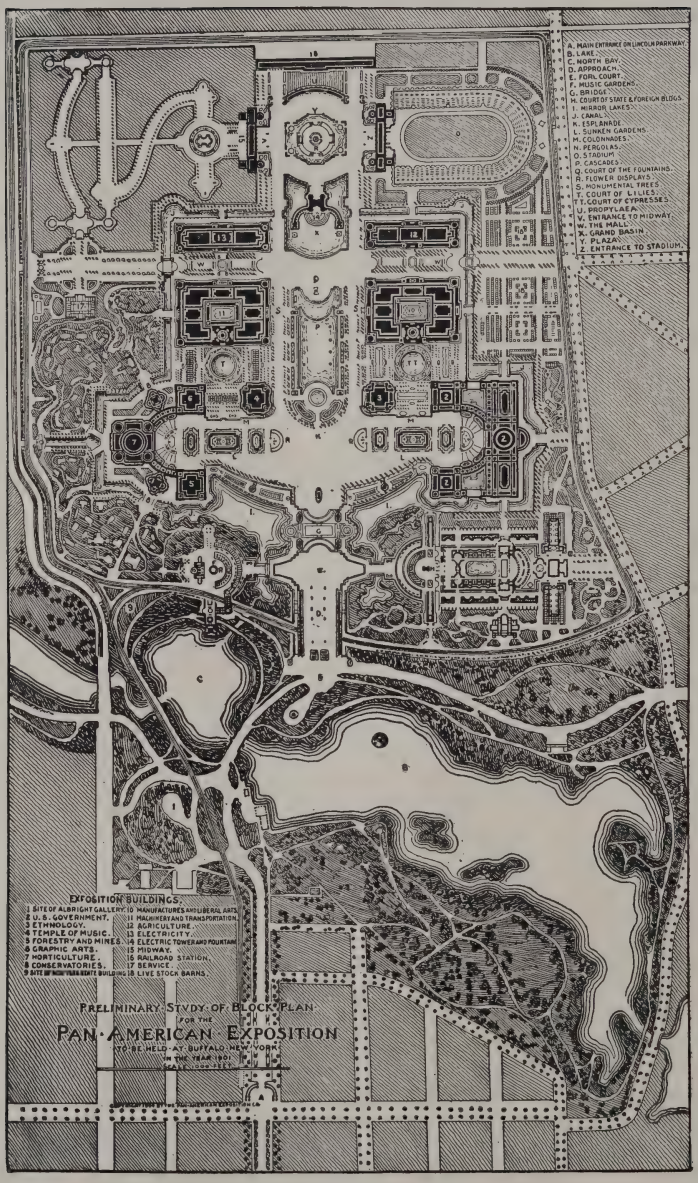
by President Washington 1791, and many of the early records, deeds, letters and early correspondence relative to the Federal building at that time are still on file.

Taking this beautiful Ionic official home of the Presidents as the evolution of the taste and skill of James Hoban, the first architect, it may safely be said that a century of experience in the building of classic styles has produced no purer results, nor does this long lapse of time in the slightest degree lower the exalted standard which it presents today.

Frederick D. Owen.



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SOME NOVEL FEATURES OF THE PAN-AMERICAN EXPOSITION.

Impressions and Opinions.

I.

TO hold an exposition, Pan-American by name and nature, in a city of the size and situation of Buffalo was not in itself a happy idea. Buffalo is the creation of the great lakes in general and specifically of the Niagara River. Its peculiar prosperity is derived partly from internal commerce and partly from its proximity to Niagara Falls. A Pan-American Exposition, on the other hand, so far as there is good excuse for its existence, should have been held in some city looking outward over the waters that connect the two American continents—in a city like New York, possessing actual business and social affiliations with the southern continent. But it may be doubted whether there is a good excuse for its existence. Pan-Americanism is neither a sufficiently desirable ideal in politics or a sufficiently important fact in commerce to deserve celebration in an exposition. The business, educational and sentimental ties of the Spanish-Americans bind them to their blood relations in Europe, and not to their domineering protectors under the Monroe Doctrine; and in precisely the same way our own sympathies and interests are both very much more engaged in England and on the continent than they are in Ecuador and Peru. Pan-Americanism is at bottom the political aspiration of a group of American statesmen, who believe that in some indefinite way American nationality will find a securer foundation and a larger scope by intensifying artificial relations with the insignificant minor states of South America than by cultivating perfectly natural relations with the people in Europe, who buy our products and advance us their culture. This I take to be an error; and to judge from their general behavior and their representation at the Exposition, the South-American states take it to be an error also; but for good or bad it is a very popular view in this country, and such a noisy one that, following an advertising map freely used at the exposition, it may fitly be called not Pan-Americanism, but Tinpan-Americanism.

The strength of the Buffalo Exposition consisted not in the least

in its being Pan-American, but in its being genuinely and typically American; and it is genuinely American, because it has made such an intelligent use of the peculiarity and strength of its local position. Let it be set down as a most remarkable and memorable fact that a city, no larger, no wealthier, and no more centrally situated than Buffalo, has succeeded in creating an exposition that possesses the merits both of power and distinction. It is a striking example of the local energy, the faculty of organization, and of the ability to conceive and execute large enterprises, so characteristic of American industrial achievement. It is also a striking example of the readiness of a minor American city to put aside on an important occasion its provinciality in matters of taste, and to make its triumphal constructions embody something like the best ideals and training of American art. Considering that the United States are necessarily a decentralized country, and that decentralization in matters of taste generally leads to crudity, the coöperation between local initiative and the best existing standards of artistic taste, of which the Buffalo Exposition is an instance, promises well for the future of the fine arts in this country. Altogether Buffalo deserves enormous credit for having tried to maintain the level of achievement, which had been set by Chicago, and which was difficult to maintain with the resources at her disposal.

II.

Gayety was undoubtedly the dominant note struck by the Exposition architecture and grounds, and this gayety had its contagious effect, not only on people ordinarily sensitive to those influences, but also upon those ordinarily torpid. It was a place in which many good Americans were beguiled without knowing why into forgetting the familiar preoccupations of their workshops and offices, and allowing their natural good humor a responsive expression. They were suddenly transported into surroundings, as different as possible to those by which they were ordinarily accustomed, and every aspect and suggestion of which were festive and entertaining. Here was a city of generous spaces and far-reaching views, whose pleasant perspectives provoked a similarly expansive feeling within; a city whose buildings exhibited the utmost variety of line, mass and color, and spoke plainly of the easy-going, careless, and exuberant life of the southern peoples; a city of lagoons as well as of footways, whose long vistas of sparkling water offered to an overheated body placid and cooling suggestions; a city that was also a garden, in which tired eyes could find an abundance of shaded corners, and the refreshing relief of green foliage and grass; and, finally, a city that did not need the sunlight in order to keep its gayety, but as it was lively during the day, so

was it brilliant by night—brilliant yet mysterious. In short, everything about the Exposition, but particularly the color and the illuminations, by intensifying to the average visitor the difference between this city of color and light and his familiar surroundings, did much to sharpen the impression that they had passed for



THE COURT OF THE FOUNTAINS FROM THE ELECTRIC TOWER.

a moment into a new world, in which all one had to do was to look around and be merry.

Unless I am very much mistaken, a very large number of Americans, if influenced by anything in the Exposition except the Midway, were influenced in something the way described above. Whether they realized it or not, they were under the spell of unusual and highly stimulating surroundings, and to have cast that spell upon them was an admirable and useful achievement. Ordi-

narily their surroundings have little or no effect upon them, and they can laugh and be merry in streets and rooms that to more sensitive people would be utterly depressing. It requires, consequently, the strongest sort of a contrast and the most vivid and insistent suggestions to awaken them to any sense of essential difference between one place and another, and about the only contrast that seems in most cases to be sufficiently strong is a trip to Europe or a visit to an Exposition such as that at Buffalo. Of the two the Exposition has some advantages, because, however fantastic and



THE ELECTRICAL TOWER. A DIAGONAL VIEW.
John G. Howard, Architect.

unreal it is to them, it makes its appeal as a native product, which somehow cannot be altogether alien. The cathedrals, castles and palaces of Europe belong to the past of a foreign people; they are interesting, but out-of-date. An Exposition, on the other hand, is as contemporary almost as a daily paper, and as American as electricity and Niagara Falls can make it. Hence its effect in stimulating popular appreciation of the relation which may exist between a feeling of exhiliration and a beautiful environment, is likely to be more immediate and telling than the effect of a European pilgrimage; and it is telling, because it comes upon them, if at all, in a natural, insidious, and half-unconscious fashion.

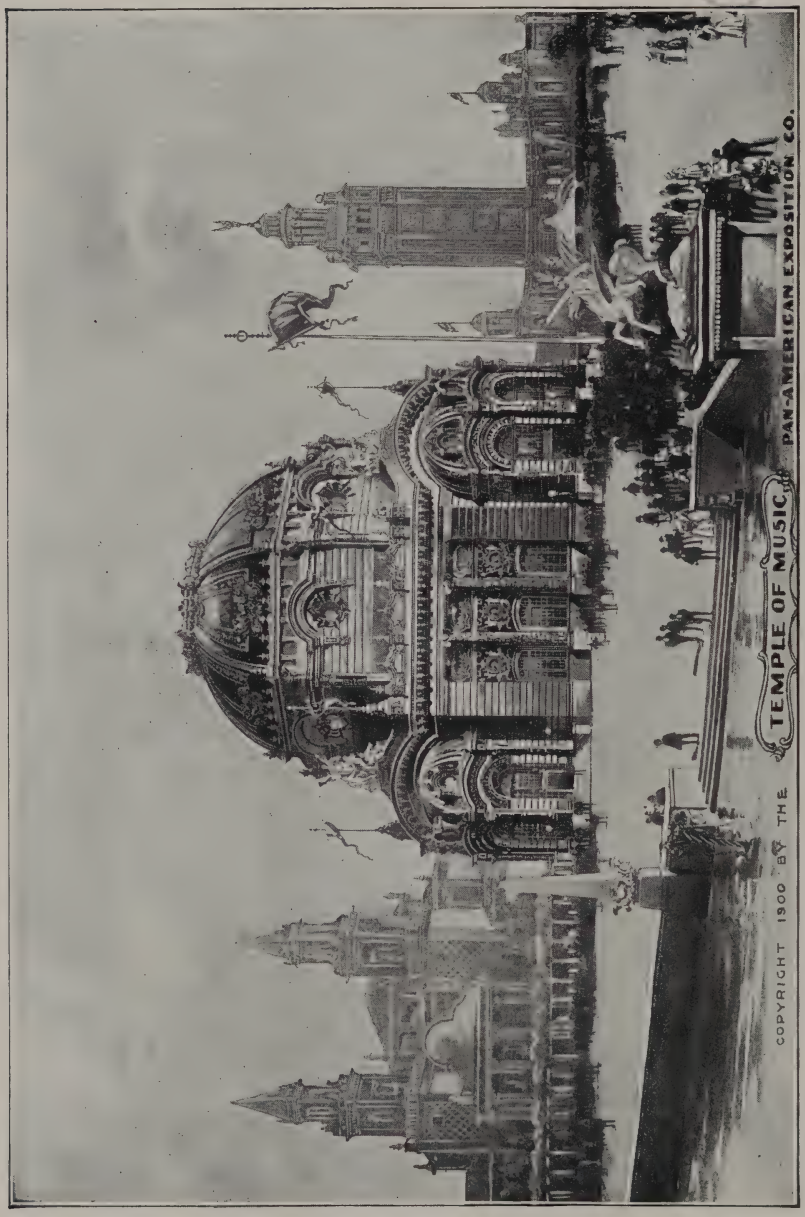
It is scarcely necessary to add, however, that the unquestionable success, which the Exposition has achieved in suggesting to

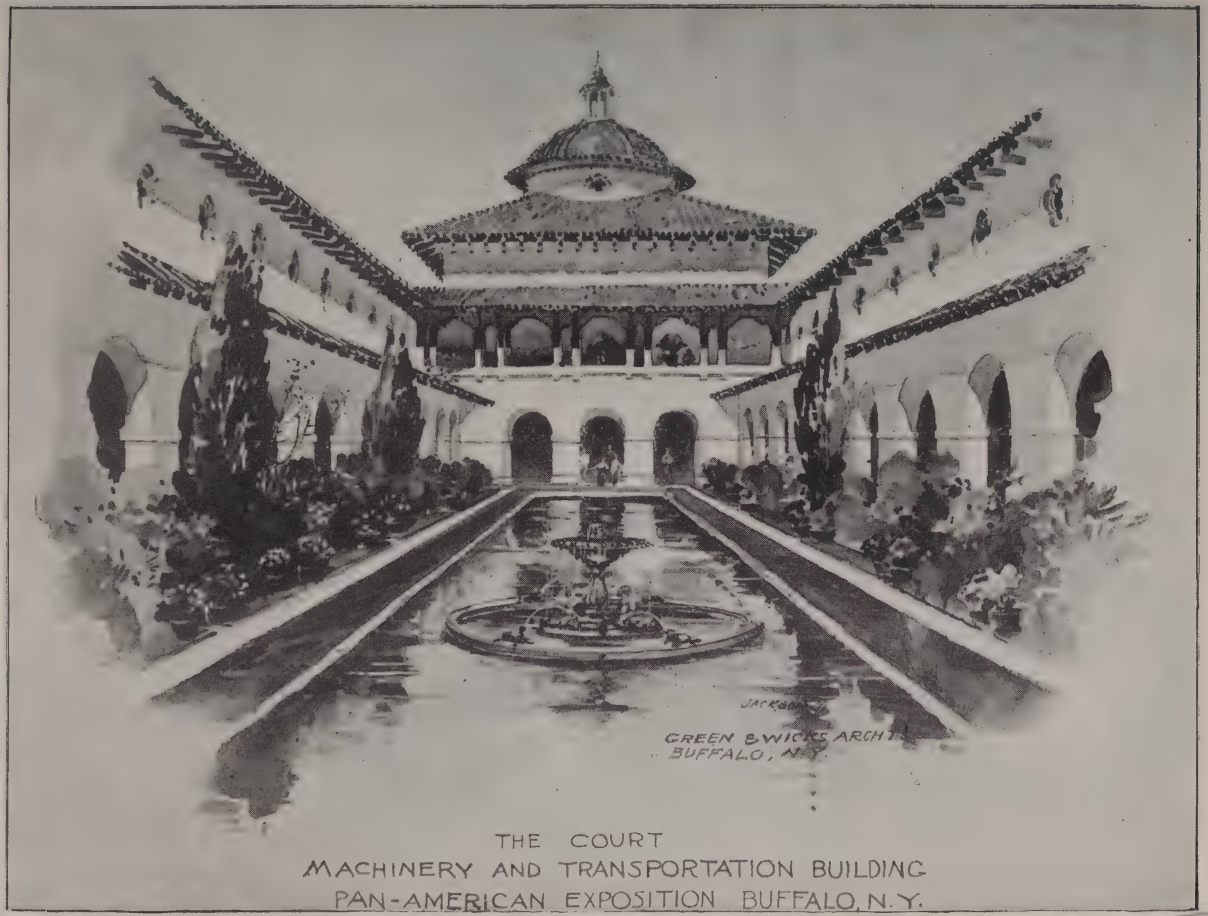
some good Americans that seemly surroundings may be an element in happiness must not be confused with an indiscriminate approval of the means taken to reach this result. The current magazine criticism has for the most part made altogether too abruptly the transition between a cordial recognition of the gay-



THE ELECTRIC TOWER. A LATERAL VIEW.
John G. Howard, Architect.

ety of the general effect, and an unqualified acceptance of the actual plan. Many of these commentators have followed too much in the wake of the generous official interpretations supplied by the management. They have been content to point out that a careful attempt was made to work out a consistent and elaborate plan, in which each separate feature should have its proper place, and in which every available means should be used to obtain a con-


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TEMPLE OF MUSIC



THE COURT
MACHINERY AND TRANSPORTATION BUILDING
PAN-AMERICAN EXPOSITION BUFFALO, N.Y.

summate effect; but they have passed lightly over the actual integrity and adequacy of the plan itself. Yet notwithstanding many obvious and considerable merits, the plan possesses several very important defects, which prevent it from being a consummate success, and which will always leave our memories of Buffalo tinged with the regret that so good a thing could not have been better.

From one end to the other, the design shows more fertility in ideas than success in carrying them out, or in putting them properly together. The idea of the Court of the Fountains, with the Electric Tower as its culminating feature, with the most important buildings grouped along its sides, and with the main approach across a Triumphal Bridge, and through an Esplanade that offered interesting lateral fountains, arcades and buildings—this arrangement had some of the earmarks of a big architectural idea. It had the advantages of a bold central feature, built for a purely symbolic and decorative purpose, and expressive more than any other structure of the actual motive of the Exposition, of a court and square which could be flexibly used to accommodate many different buildings, and of very generous spacing which both across the water, and along the axis of the design, offered numerous opportunities for surprising and charming views. Moreover, many of these advantages were realized to the full. The Electric Tower came near to being at once as light and yet as dominant and impressive as its situation and function demanded. The effect of the Court and the Esplanade was sumptuous and imposing, and some of the prospects across the water of the buildings on the other side were altogether charming and delightful—this being particularly true of a diagonal view of the towers and broken lines of the Machinery and Electricity Buildings, and also a similar view from a point at the opposite side of the simpler outlines of the Ethnology Building.

But successful as the Court in some respects is, it is far from being an unequivocal success. For one thing, the Electric Tower, while it looks well from the distance, becomes less satisfactory, according as it is more nearly approached. The Tower itself is a well-tempered and graceful structure, although it would have been better had it been taller, as it was designed to be; but it can not be said that the colonnade makes a well-proportioned effective base. From a near view, it is too narrow, and the pavilions are too thin. A more serious criticism must be passed upon the great monumental and decorative feature of the opposite end of the court. The Triumphal Causeway does not look badly from a distance; but whenever its pylons are brought by the eye into any immediate relations with the neighboring structure, every other object is dwarfed by their imposing dimensions. As you enter the Court

and look past the pylons toward the buildings beyond, even the Electric Tower itself becomes insignificant beside their looming masses. Instead of a proper subordination of this most spectacular incident to the scale of the other buildings, a visitor is confronted by a manifest over-emphasis of a purely decorative feature, whose only reason for existence was its fitness to complete and



TRIUMPHAL BRIDGE FROM THE WATER SIDE OF ONE OF THE PERGOLAS.

intensify a general effect. But not only are the pylons too imposing for the Causeway, but the Causeway is too broad and spacious for the water it has to span. Although treated as a monumental bridge with a footway that rises gradually to the center of the arch, it does not make upon a person who enters and crosses it the actual impression of a bridge. The water is the only possible excuse for the whole structure, but that water is entirely concealed by the bridge and its huge towers. In order to find it you have to go in search of it, and insist that it shall not escape you. Wher-

ever the Causeway can be seen across the water, as it can from the outer sides of the Mines Building, it looks comparatively appropriate, but from all ordinary points of view it presents the appearance of a wide passageway, and not a bridge. If as the designer evidently believed, the large area of the Esplanade and the Court



A WATER VIEW, LOOKING TOWARD THE ETHNOLOGY BUILDING.
George Cary, Architect.

beyond demanded an approach correspondingly spacious, the demand could have been satisfied by the construction of a more logical and less pretentious structure.

An equally if not more serious defect in the general plan is the lack of an effective approach from a direction actually employed by the public. Unless a visitor selected an entrance, so inconvenient as hardly ever to be used, he would not have been led to the splendid effects of the Court of the Fountains by successive and

inevitable stages, but he would have stumbled upon them unawares. This is particularly true of the people who entered by the most popular of all the gates—that which was served by the electric cars. Probably two-thirds of the visitors made their approach from this direction, and as they strolled up the path diverted only by an uninteresting building, some extremely energetic sculpture,



THE GRAPHIC ARTS PAVILION.
R. S. Peabody, Architect.

and some stupid and uneffective beds of flowers, they would have no reason to suppose that they were approaching anything more important than, say, the Central Park Casino. When, however, they reached the forecourt and faced around, they would suddenly find themselves upon the edge of the Triumphal Bridge, which, according to the plan, was supposed to have been approached from the Park and Lake. But it is absurd to design a chief approach, which, as a matter of fact, people rarely use, and

the general plan should either have been rendered more independent of the Park, or the Elmwood Gate and the pathway should have at least received an interesting special treatment. A criticism, different in details, but something to the same effect may be passed upon the entrance through the Plaza at the other end of the grounds. Of course the designer of an elaborate expo-



A CORNER OF THE MACHINERY BUILDING.
Green & Wickes, Architects.

sition plan can scarcely be held responsible for more than one logical entrance, while for the convenience of the public there must and should be a number of gates, which cannot pretend to lead gradually and inevitably to the central features of the plan. Consequently, in spite of the fact that all the people, who reached the grounds by the railroad, entered through the Plaza, it need not be objected to that very interesting enclosure, that a square is not

properly an approach. The trouble rather is, that situated as the Plaza is, behind the Electric Tower, people are conscious while there that they are in the backyard of the Exposition—that everything of the utmost importance is on the other side of the Tower. It seems a pity that the buildings around the square, which were



BACK OF THE MACHINERY BUILDING, WITH A VIEW OF THE CANAL.
Green & Wickes, Architects.

all of them very effective, much more so than the square itself, could not have been used to contribute their quota to the rich and splendid effect of the Court, the Fountains and the Tower. Indeed, the design as a whole may be criticized from this same point of view. Considering the lavish expenditure of space and money upon the Court it might better have been used even more than it was as the center, around which the buildings were grouped. As it is any episodes in the design, such as the Plaza, appear insignifi-

cant beside the Court, and might as well have been made in some way more directly contributory to the general effect.

In addition to the Court of the Fountains, the designers are to be credited with two other happy, and in this connection original ideas: the electric illuminations, and the use of color to enhance the architectural values. The first of these has undoubtedly the great popular "card" of the Exposition, and probably did more to advertise it than any other single attraction. But since its association with the architectural design was only accidental, it can be left to the critical approbation which it is receiving so abundantly at the hands of the popular magazines. The effect of the illumination was startlingly novel and brilliant, but if it is possible for any future exposition to use the same amount of light, perhaps better results can be obtained by freeing the plan of the illuminations from such a scrupulous adherence to architectural outlines. The use of color was a novelty of much greater architectural interest. If the Buffalo Exposition can stimulate American architects to pay more attention to color values in their designs, it will have made at least one valuable contribution to American architectural progress. The designers of future expositions will make an error, if they do not repeat the experiment of the past summer, for it is evident that under the peculiar conditions of exposition architecture, proper coloring is of enormous importance, both in intensifying the general effect, and in increasing its gayety and picturesqueness. It must be added that so far as its use at Buffalo was concerned the idea was happier than its realization. Even as it was, it did increase enormously the gayety and picturesqueness of the general effect, particularly in the case of all those buildings the coloring of which followed most closely the coloring actually used in similar buildings in Southern Europe. In regard, however, to the general color scheme, we may adopt the views of one of the official critics of the exposition—Mrs. Schuyler Van Rensselaer: "The color does not run, as many people feared it would, in the direction of crudity and gaudiness. It errs in the opposite way. Under our strong blue summer sky, such colors as were used in ancient times around the Mediterranean, and are still employed there might safely have been applied—stronger, clearer reds, pinks, yellows, greens and blues—laid on in more telling masses, and pure white might have been used more largely in their background." The application of color, however, to the architectural masses was successful compared to its application to the details. Nearly all the buildings, except those around the Plaza were overloaded with coarse, tedious ornament in high relief; and these ornamental details, in themselves altogether too prominent were further emphasized by the application of various tawdry colors. It



THE STADIUM AND THE PROPYLAE.

is in detail of this character that American architecture is seen at its worst. The decorations seem in many cases to have been poured on with heavy-handed indiscrimination, whereas wherever such detail was to be made more emphatic by color, it should have been in low relief, and should have been used with the utmost discretion.

Although the use of sculpture at Buffalo was less of an innovation than the illuminations and the color, an energetic attempt was made to emphasize its importance and to distribute it effectively throughout the grounds. To this end the Director of Sculpture was given a place with the Director of Color on the Board of Architects, and by the help of a central studio in which the models of the different sculptors could be enlarged by a regular staff, it was found possible to produce a large amount of original work at a comparatively small cost. It is, perhaps, for this reason that, very decidedly, there was an excess instead of a dearth of sculpture scattered throughout the Exposition grounds. It was made altogether too cheap, so that at times the rows of statues seemed to claim one's attention in almost as insistent and tiresome a manner as they would at a sculpture exhibition. It follows, of course, that far from being situated only in spots, made appropriate for their use by proper landscape gardening, they were in many cases placed in an ineffective background or in spots which would have been better off without them. The difficulty partly is, of course, that in all Exposition work, the landscape gardening necessarily lags behind the building and the sculpture, because it is impossible in so short a time to get the full effects even of extremely generous and intelligent planting, and nothing is more necessary for the effective placing of sculpture in the open air than the proper distribution of foliage. But it is to be hoped that in subsequent expositions sculpture, because it is cheap in price, will not be made cheap in its effect. This was all the more to be regretted, because, while some of it was very bad and much of it had a tendency, particularly disastrous in sculpture, to be too expressive and popular, much of it, also, was carefully studied and extremely interesting work.

III.

Unless the popular temper changes, it is manifest that we are going to have a great many of these expositions within the next twenty-five years. Probably every great section of the country, such as New England, the Far West and the Southwest, will find or make a good opportunity to celebrate some past event or some present achievement. There are many signs that even New York

is itching for the notoriety of a World's Fair, and that within some few years, she will effervesce in an exposition commensurate with her metropolitan importance, and determined in its nature by her extensive relations with foreign countries. In view of this prospect, the probable effect of these transient cities of plaster upon



THE FOUNTAIN OF ABUNDANCE.
Philip Martiny, Sculptor.

American architecture and the allied arts is a matter for serious consideration. As to the importance of the effect and the reality of the problem there can be no doubt. The chorus of surprised and delighted criticism, which was provoked by the Chicago Fair, and the manifest influence of its beauty in assisting the popular success obtained by that Exposition during the last few months of its opening, taught exposition managers that in this business artistic effectiveness is the best possible advertisement. Buffalo

has claimed approval even to a greater extent upon the same grounds, and, according to all accessible information, St. Louis will follow carefully in the footsteps of her predecessors. The whole logic of exposition development in this country tends to an even greater concentration of attention upon the artistic opportunities of these structures—at once so elaborate and so frail, so expensive and so unsubstantial. Indeed, it is not too much to expect that they will become one of the most important single influences in the transformation of American architectural art and in the technical training of American artists. Will this influence be upon the whole good or bad? And, if either good or bad, how and under what conditions?

Exposition work has the manifest of advantages to the artists that participate in it of being both stimulating and disciplinary. It affords them a magnificent opportunity for the creation of a really big piece of imaginative architecture—an opportunity in dealing with which they are emancipated, to an unusual extent, from restrictive practical considerations; and this opportunity is at the same time a discipline, because the design is conceived and carried out in association with other architects and artists, who have more or less considerable rights of participation and criticism. The chance to produce an elaborate and complete work of merely formal beauty, to control to a very large extent the conditions which affect the work for good or ill, and at the same time to be subjected to the necessity of meeting the requirements of other architects, of sculptors, colorists, and landscape gardeners—all this is a most valuable contribution to the experience of American artists; and its value is not limited to those who actually have a share in the work. For architect and sculptors who merely inspect the completed design will be stimulated to think what they might have done with the same opportunity, and the consequence is that an amount of technical comment is generated and is passed around which cannot fail of value to all concerned. In short, an exposition under present conditions exists chiefly for the purpose of being artistically interesting and effective; and the same statement can scarcely be made of any other typical work of American architecture, or of painting and sculpture so far as they are closely allied with architecture.

These advantages are in some measure offset by several obvious disadvantages. The work of preparing an exposition is so vast and so intricate that it requires an organization equally elaborate and correspondingly efficient. But in such an organization the individual cannot count for as much as he should; he becomes to some extent the victim of the machinery, which the completion of such a vast undertaking within sixty days of the



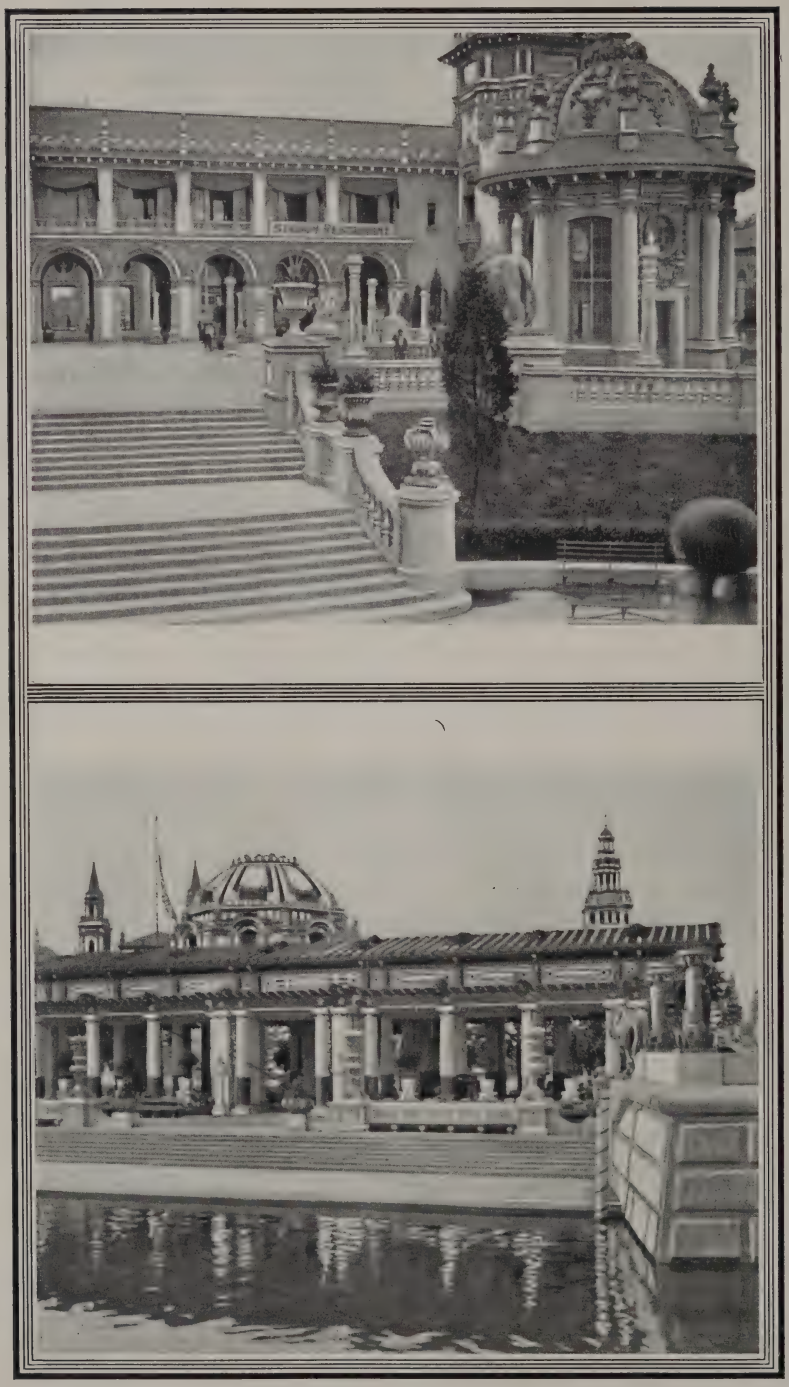
THE MALL.
THE WATER SIDE OF ONE OF THE PERGOLAS.
John M. Carrère, Architect.

specified time demands. Things about his special work, which he most values, are crowded out by the constant pressure to obtain immediate results—results, which, consequently, represent not the man's finer moments, or his careful and finished conceptions, but the best that he can do in a few months of hurried labor. The consequences are that the artist frequently fails to obtain the experience, which alone induced him to undertake the job, and that the observer is constantly disappointed by pervading evidences of good ideas that are badly realized, of excellent architectural motives not consistently developed, of obvious errors partly concealed by equally obvious devices, and of frequent carelessness and shiftlessness in the management of detail.

It must be added that these drawbacks are superficial symptoms of a more radical trouble. An exposition is after all only a show, and what is worse, a very temporary show. The curse of ephemerality hangs over the whole undertaking—of an ephemerality, the effects, of which are only more baleful, because the undertaking itself is vast and pretentious. To create a great work of the imagination, not for as long as stone shall last, but for six months of the year 1903; that is in artistic enterprise, which has its logical as well as its practical disadvantages. The mere fact that exposition buildings are so largely independent of the ordinary structural necessities, and that they exist merely for the purpose of creating a temporary effect subjects the architect to a constant temptation of sacrificing over much to the prime object of making his plaster walls attractive and interesting. He obtains the discipline of being obliged to work in association with other artists; but he loses the equally important corrective and ballast of being obliged to erect a sound, permanent, and serviceable structure. Exposition work seems to become demoralized in proportion as it becomes self-conscious—in proportion as it realizes its peculiar advantages; and it is a question whether American architects, although they really desire to maintain the standard of dignity set by Chicago, can resist the temptation to seek effectiveness on each successive occasion by more startling and meretricious means. The Chicago Fair was productive of nothing but good for American art generally, but obviously a number of attractive experiments one after another may have a very different effect from the first and happiest of the series. While novelty, when prompted by originality and corrected by good taste is one of the most wholesome and delightful things in the world, a succession of novelties might easily become one of the dreariest and least wholesome things in the world; it might continually tend to become more sensational and experimental. If one may judge from the gaudy display in Paris in the summer of 1900, French expositions have

already reached the stage, in which frivolity becomes a virtue; and while the Buffalo Fair is by comparison a model of good taste and self-restraint, yet as compared with Chicago, it is plainly designed to be something both different and livelier; it is intentionally novel and gay. The desire for advertisement, the necessity of creating a sensation may well drive subsequent expositions still further in the same direction; and should this be the case, these expositions might easily become more powerful influences for evil in American architecture than they have yet been for good.

There are, however, considerations from another source, which may be brought to bear on the problem. Hitherto we have been discussing the effect of expositions upon American artists; but what of their effect upon the American public, who pay for them and enjoy them? For my part, I cannot help thinking that their value to the public is much less open to dispute than their value to the artists—and for the reason that expositions are the one popular expression of American art—the one expression that millions of people in some measure enjoy—the expression that tends most powerfully to awaken popular realization that American art may have a place near the center of American life, and not on its margin. I have registered my own impression in the foregoing pages that at the Buffalo Fair, people ordinarily torpid, seemed to fall under the spell of their surroundings, and my opinion that no work of art any less elaborate and complete could produce such an effect. It only remains to insist upon the importance of this effect. Expositions from their nature offer an opportunity, altogether unique in this country, of making large numbers of people feel at home in attractive and interesting surroundings. In an aristocratic society the upper classes are the natural patrons of the fine arts, and what with their wealth and a high standard of taste are almost always able to make things of some beauty and distinction actually contribute to the happiness of their lives, and in this way to the wholesome domestication of art in their midst. In a democratic country, on the other hand, the rich cannot by any amount of patronage really domesticate and nationalize the fine arts, because the standards of domestication are necessarily more inclusive and popular; and in such a country, where the home surroundings of most people are bleak or tawdry, expositions are peculiarly adapted to the purpose of bringing objects of some beauty and distinction into association with popular pleasures and even popular utilities. In this way they will surely increase that fund of national artistic self-consciousness, which must both be increased and be more widely distributed before American democratic society can attain any very considerable vitality of artistic achievement.



THE STADIUM RESTAURANT AND THE PERGOLAS.
The Architect of the Stadium Restaurant was Walter Cook.

Unfortunately, however, the popularization of an art, which was meretricious and frivolous would scarcely be a desirable or fruitful service, and consequently we must return to a consideration of the possible demoralization of exposition work in the direction of



THE CANAL FROM THE ELECTRIC TOWER.

mere novelty. In the long run there is only one possible safeguard against such demoralization. The architects, and other artists employed upon future expositions, instead of seeking for merely new and startling effects must be content to adopt good ideas which have already been used, and simply try to use them better. The design of the Pan-American Exposition is full of original and suggestive conceptions, which are capable of being much more thoroughly and successfully worked out; and if they should be

taken over in subsequent expositions and worked out to better advantage, then American architects will have gained an experience which will be useful to everybody who follows closely the improvement of the second attempt over the first. But, on the other hand, if the successive experiments remain nothing but experimental, and are subsequently dropped for newer experiments, the issue can hardly fail to be unfortunate in its effect both on the architects and upon popular standards of taste. Moreover, if good ideas, developed in exposition work, are pushed to a more successful treatment in subsequent expositions, this progressive experimentation will enormously assist architects in dealing with opportunities for permanent architectural improvements. Nothing is more certain than that within the next two or three generations, the various public bodies of this country, municipal, state and national, will undertake a series of gigantic public works—such, for instance, as the proposed improvement of Washington—and that these public works will offer American architects opportunities to design a series of noble and beautiful public buildings. The experience obtained in exposition work ought to be of immense assistance in enabling architects to rise to these chances. This assistance would be unquestionable in case every city holding an exposition were sensible enough to plan the erection of one or two buildings, which would serve as permanent memorials of the event, and which might tend to increase the seriousness of the whole performance. But at any rate that indicates the great end to be sought. If exposition art and architecture can be kept in close and fruitful relations with what is progressive and normal in American art and architecture its effects will be wholly beneficial. If on the other hand, exposition art and architecture becomes too self-conscious and aggressive, its effects will be almost wholly deleterious. The outcome is for the most part in the hands of the architects themselves.

Herbert Croly.

"MONUMENTAL" ENGINEERING.



ONE of the queerest anomalies in the present condition of the fine art of architecture is that the designers of certain classes of structures are in practice exempted from taking any pains about the appearance of the structures they erect. And this not because these structures are the least conspicuous, for they are very apt to be the most conspicuous. Here in New York, for example, if one were asked to pick out the most conspicuous and far seen of all our buildings, as well as the most enduring, and therefore that by which we are likely to be judged by the furthest posterity, he would have to name the Brooklyn Bridge, or at least the towers of that edifice, which in virtue of the massiveness of their masonry may be expected long to outlast the web of metal that swings between them, and also the metal cages, veneered with irrelevant masonry, that constitute the "skyscrapers" which in point of conspicuousness are their nearest rivals. Nobody will maintain that the towers are worthy of their conspicuousness, as good as they ought to be or as they might have been made. To many observers, indeed, the grim utilitarianism of the skeleton towers of the newer bridge, now rising stark on the opposite shores, is more impressive, although, perhaps, because, the art in them is unconscious. But their design is at least an exposition, which is more than can be said of the older.

Since the building of the future is evidently to be increasingly the work of the engineers, it behooves the rest of us, as well as themselves, that it should become worthy of its conspicuousness. The only way in which this can really be accomplished is to add some training in artistic expression to their training in practical construction. Modern engineering is a very modern thing. With the enormous advantages it has brought to the world, it has brought this disadvantage, that for the first time in human history a broad line has been drawn between scientific construction and artistic

construction, and that the designers of one class of constructions do not hold themselves responsible, nor does any one, for the looks of their work. If an engineer builds safely and cheaply, in a word scientifically, his work may be as ugly as it will, without any impairment of his professional reputation.

As we say, this is a novelty in history. The times in which scientific building was carried to its highest pitch have been those in which artistic building flowered. Every mechanical advance made during the Middle Ages was at once translated into terms of fine art, so that, when the culmination of the work of many generations was reached in the fully developed Gothic cathedral, it is impossible to separate our admiration of the scientific skill of the builders from that of their artistic skill. The work is artistic because it is the artistic expression of what the artist was doing in his capacity of scientific constructor. That one man should devise a construction and another make it presentable was a proposition never heard in the world till within a generation. Evidently, except to a veritable Gradgrind, it is a deplorable condition when that is the rule.

Evidently, also, the only real remedy for it is to give the scientific constructor an artistic training. In this country, where engineering has already achieved some of its greatest triumphs, and where, visibly, "that which it has done" is but "the earnest of the things that it shall do," no attempt is made, I believe, in any school of engineering to teach its architecture. I have been looking through some volumes of the "Proceedings of the Society for Engineering Education." They cover a very wide range of subjects, but I have failed to find a single suggestion in them that there was any occasion for educating engineers in the art of giving artistic expression to what they were doing. In France there is a professorship of architecture adjoined to the Department of Roads and Bridges, and it is fair to suppose that it has had something to do with the vast superiority of the bridges across the Seine, for example, over the bridges across the Harlem. One of the latest of the Parisian bridges is also one of the most exemplary, the Pont Mirabeau, away down at Auteuil, and therefore beyond the range of ordinary tourists. In this we may see how a modern bridge, which is not only of metal but a "cantilever" can be made as beautiful as an arched structure of masonry by taking thought for its beauty. A later work, by the same engineers, and a much admired work, is by no means so successful. The Alexander III. Bridge is admired, we must suppose, by those who have considered only its broad roadway, the bronze group at the summit of its flat, low arch, and the groups of marble that adorn the piers at the entrances. For nothing could be more ineffectual as an example of artistic engineering than the detail of the actual construction, as it is seen from the river

or from the shore underneath. Here are such meaningless and ugly solecisms as a riveted metal post, which is of course, constructionally, a continuous and connecting member, turned into the shaft of a pseudo-classical column, with a capital and a base of carved stone which merely conceal, and even deny, the essential facts of the case.

But nevertheless a comparison of the bridges across the Seine with the bridges across the Harlem, including the modern bridges of metal in the older city, cannot be satisfactory to the American engineer. Making every allowance for the swing span which no engineer has yet found entirely tractable in an artistic sense, and making allowances also for the differences in artistic merit among the bridges across the Harlem, it is overwhelmingly evident that the French engineer is, artistically, a far better trained man than the American engineer. For it is not only in the architectural adjuncts of his bridges, of which the American bridges are commonly devoid, and for which architects and sculptors have been invoked, but in the engineering conception and the engineering details that the artistic superiority is manifest. And it is impossible to see how this defect is to be removed except by the artistic training of the engineer himself. Not only is there no such provision made for such instruction in his schooling, but there is next to nothing about it in his text books. A technical handbook of "Modern Framed Structures, issued in 1894, contains a chapter on "The Aesthetic Design of Bridges," which is declared by the editor to be an essay "in an entirely new field." Its precepts, though doubtless generally sound and sometimes even striking, seem rather too vague and general for practical purposes. There is an architectural chapter in the manual on "Highway Bridges," by Mr. A. P. Boller, whose own works are honorably distinguished, among those of his profession, by the evident and generally successful pains taken with respect to their appearance. And, in a still later manual of bridge building, there is a chapter by Mr. Henry Van Brunt, but this is avowedly, and in the circumstances almost unavoidably, written rather for reproof than for instruction. With these exceptions I know of no attempt to set forth instruction in artistic design expressly for the use of American engineers.

But evidently such things must be too slight or too vague to supply the place of systematic training in the art of expression. Evidently the modern engineer will not be on the same plane as the ancient builder until, like him, he seeks and finds the appropriate and artistic expression for every mechanical device he employs. And even the desirableness of such an expression does not, as we see, appeal to the engineering profession, but only to here and there an exceptional engineer. It is even expressly denied by some

engineers. One of them maintains that a bridge, being a "tool of transportation," it does not matter how it looks, which is as if one were to maintain that a house being the supply of the need of shelter, it did not matter how that looked. And, to some considerations adduced by the present writer, in another magazine, to indicate the need of a higher training in artistic as well as scientific construction, a journal which aspires to represent the engineering profession observed that the criticism was entirely irrelevant since the engineer was commonly willing to hire an architect to make his work presentable, whenever his employer was willing to go to that additional expense.

The avoidance is in effect a confession. Evidently it is the author of a construction who must express it if it is to be well expressed. "It is difficult for a man to give expression to an idea of which he is not possessed." By reason of the modern divorce between scientific and artistic construction it has come about that in the skyscraper we cover up the engineering with a mask of irrelevant architecture, and in the metal bridge leave it in a nudity which often seems to be an indecent exposure.

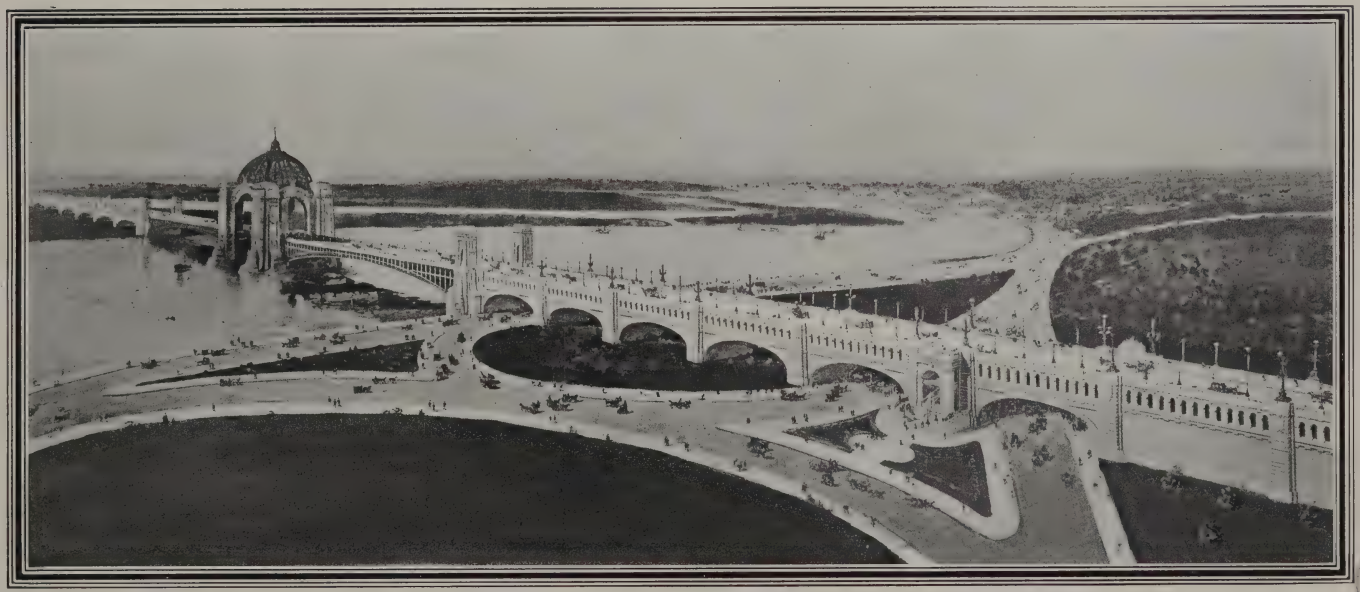
Meanwhile, when, in the language of an engineering author, "the artistic appearance of a structure is imposed as a necessary feature," it is to be expected that the engineer, untaught in such things, will invoke the aid of an architect. This is the course which has been pursued in relation to the proposed Memorial Bridge across the Potomac from Washington to Arlington. The project is some fifteen years old; and an actual design for executing it, about which we shall have something to say later, bears date 1887. It has been dormant, but never quite dead, during the interval. But the immediate revival of it has been due to the actual appropriation of $5,000 in the sundry civil act of 1899, "to continue the examination of the subject and to make or secure designs, calculations and estimates." In accordance with this instruction the Chief of Engineers invited four engineers of undisputed eminence in their profession, the authors of important works, to submit designs, leaving it to them to employ such architectural assistance as in their judgment they might require. The resulting competition is worthy of a good deal more attention than it has received from the general public, having been buried from the knowledge of that public in the pages of "H. R. Doc, No. 578, 56th Congress, 1st Session," from which it seems worth while to exhume it.

It will be seen that there is much variety of treatment obtained within the conditions of the problem, and in the nine designs submitted by the four competitors. Mr. Buck's two designs are identical in their general treatment, the second being merely a cheapening of the first (the third prize design) by narrowing it and omit-

ting all provision for street cars. It divides the 4,000 feet included in the whole length of bridge and approaches into a series of granite arches of moderate span for the approaches, and, for the bridge proper, a steel drawspan of 125 feet, flanked first, by a steel arch of 355 feet span, and secondly by two granite arches, each of 100 feet. Mr. Burr's first design proposes a bascule draw of 213 feet span, flanked by four steel arches, each of 283 feet. His second, the adopted design, has a central draw of 159 feet, flanked by six arches, three on each side of steel-coated with concrete and faced with granite voussoirs, each of 192 feet span. His third reverts to the division of the first, but in this the 283-foot arches are faced with masonry and constructed of steel and concrete. Mr. Hutton's No. 1 proposes a draw span of 126 feet flanked by single steel arches of 550 feet. His second (the second prize design), a draw span of 134 feet flanked by two steel arches on each side of 272 feet. Mr. Morison's (the fourth prize) proposes five masonry arches of an average of 180 feet, with no central draw but with a single bascule at each end.

No limit of cost seems to have been made in the instructions to the competitors. They were commissioned to prepare what they respectively might judge that the Government ought to have at its capital by way of a "memorial to American patriotism." The very wide diversities of estimated cost shows how differently they viewed their problem. In very round numbers Mr. Buck's prize design was estimated at $16,000,000, Mr. Burr's at $4,000,000, Mr. Hutton's at $6,000,000, and Mr. Morison's at $3,000,000. But although economical considerations were absent from the instructions, it seems clear that they must have been very present in the minds of the judges. It does not seem possible that the mixed system of steel and concrete, faced with stonework so as to make it apparently of solid masonry could have been recommended for a monumental work, in comparison with a structure of solid masonry, upon any other ground than that of its cheapness.

It will be admitted that the competition is very interesting. Perhaps it is the more interesting because the conditions of the problem did not allow the competitors to make engineering "records." The one possible exception is the 550 foot steel arch in Mr. Hutton's design No. 1. Even this is far short of the "record" of 840 feet for the later steel arch across the Niagara. The earlier is but of 520 feet, while the arches of the St. Louis Bridge, so long the record, are of the same span, and the arches of the Washington Bridge across the Harlem ten feet less. The work with which this project of Mr. Hutton's will most naturally be compared is the Alexander III. Bridge in Paris, but not on account of the span, for the arch over the Seine is but 354 feet, so much as on account of its



PERSPECTIVE OF DESIGN NO. 1.

W. R. Hutton, Engineer.

Ernest Flagg, Architect.

extreme flatness, and even in this the newer example is the more striking. It must be owned that the Alexander III. does not look so flat in fact as it does on paper, and that the outline of the span itself is graceful as well as impressive. It was artistically a very daring feat to undertake, as has been done in this instance, an arch of 550 feet with a rise of only 37. Mr. Hutton's temerities are certainly not the product of artistic insensibility; and it may be possible that he could have made such an unprecedented performance acceptable. But we cannot blame the board for preferring the alternative design in which two arches of 272 feet are substituted for a single span of the same rise and twice the width. And it seems quite clear that the reduced openings are much more harmonious with the treatment of the masonry arches of the viaducts of the approaches, and with the smaller metal arches that span the lesser arm of the river. Indeed, one is almost forced to conclude that the engineer was influenced by the desire not, indeed, to "make a record," but to produce an engineering achievement rather than a monument in the distinctive feature of the first plan. The architectural treatment of the central feature also seems to have supplied the board with a substantial reason, quite apart from the economy, for preferring the second. It seems to be of the essence of the design that the draw span shall be clearly and vigorously expressed. As Mr. Hutton says, in his descriptive memoir, since any form of draw, except a swinging span required high towers on each side "artistically there was but one position possible for such a structure, the middle of the main river," but it is by no means so clear why, as he also says, being the central feature, it should be "further accentuated by connecting the piers by arches which carry a rectangular dome of open work in copper." For the towers, which do "constitute" the central feature are yet in plain fact, two separate features, of which it is essential to the expression of the structure that the separation should be emphasized and not dissembled, as is done when they are connected in the direction of the axis of the bridge. Each pair is the end of the bridge on its respective side of the central opening, and the ultimate abutment of the system of arches. The architectural exposition of this function requires great massiveness on the part of the piers, and renders suitable the further loads of pinnacles at the summit of each of which may of course be works of sculpture without impairing their architectural function, and of a transverse arch between them. But it does not require, on the contrary it seems evidently to exclude, a longitudinal connection. The introduction of such a connection, and of a metal crown supported equally by all four piers "has nothing to do with the case." It is a manifest example not of "decorated construction," but of constructed decoration, and has necessarily, even to the ob-



PERSPECTIVE OF DESIGN NO. 1.

Professor W. H. Burr, Engineer.

Edward Pearce Casey, Architect.

server who does not stop to analyze it, something of capricious and arbitrary. If the great span of the metal arches in this design is due to the desire to make an engineering tour de force, the central feature is even more plainly due to the desire to make an architectural tour de force, and to make it out of something else than the conditions of the problem.

These criticisms are obviated by the second design, that one which was premiated. It is a pity that it should not have been as advantageously shown as that which we are compelled to agree with the board in finding inferior to it. But, even in a plain elevation, the double arches on each side of the central span have distinctly more of ease and consequently of grace than the single arch in positions where there is no opportunity to give that arch a rise of such proportion as will satisfy the eye of its security. The piers of the draw span are, so far as can be judged from the drawing, treated so as to enhance the massiveness which comes from their dimensions and belongs to their function. The shape of the draw itself is more easily tractable than that of the first design. That was a double-deck bridge, the lower deck being intended to accommodate the street cars, which seems to be the only way in which they can properly be accommodated on a monumental bridge, especially seeing that the ceremonial occasions when the main roadway is required to be used for processions are the very occasions when the street cars will be at once busiest and most intrusive and incongruous. For this purpose, the engineer chose a lift bridge, of which the lift is necessarily a heavy trussed girder, with top and bottom chords parallel or nearly so. The omission of the lower deck enables the designer to substitute for the lift a double bascule, of which the under surface, when the draw is closed, conforms more nearly to the lines of the flanking arches than that of the parallelogram. Still that is rather a dark saying in the report of the board that "the substitution of a curve for a right line for the lowest part of the draw is regarded as desirable." A continuous curve can scarcely be the natural expression of form for a double bascule which is in fact a double bracket when the draw is closed.

Upon the whole, however, it will be agreed that the second design of Messrs. Hutton & Flagg is much superior to the first in that straightforwardness and expressiveness which belong to monumental as well as to utilitarian engineering, and that it promised a very worthy and dignified public work. The preference of the board for the second design of Professor Burr and Mr. Casey over their first is not so readily intelligible. The general arrangement of their design No. 1, it will be seen, is virtually that of Mr. Hutton's No. 2; that is to say, two metal arches on each side of the central draw, the span of the draw being 213 feet against 134, and

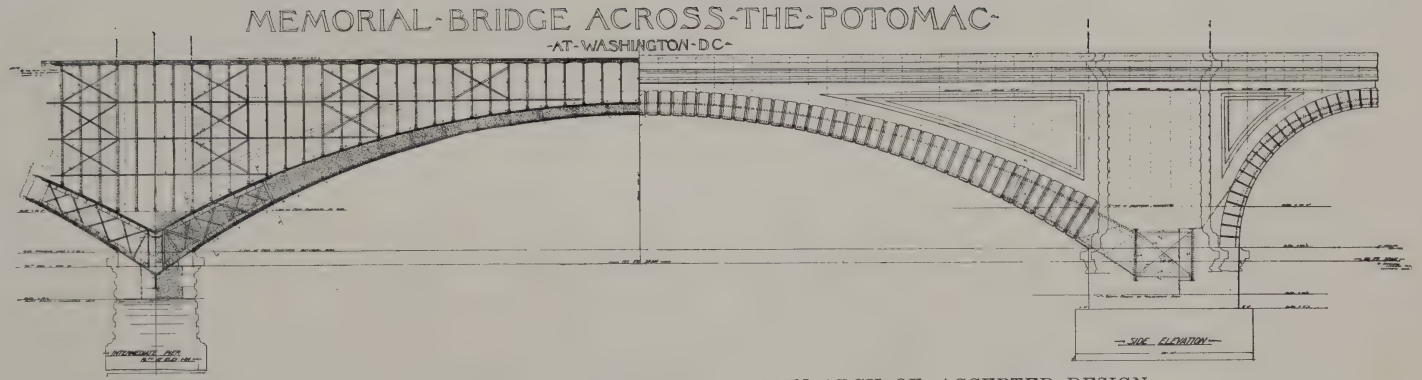
that of each arch 283 against 272. The most obvious differences in treatment are the substitution of the straight truss for the curve in the draw (although the designer's description explains that the draw is to be a double bascule and not a lift, neither has it any indication of the form of a bascule, nor can a juncture be made out from the drawing) and that the "solid web" of the steel arches is much more conspicuous than in Mr. Hutton's design. This impression comes only in part from the fact that the latter is shown only in a small scale elevation, against the elaborate perspective by which the author indicates his preference for what the official judges and the present commentator regarded as the less eligible of his two projects. In fact, the solid web is in Mr. Hutton's scheme but six feet deep, while in Professor Burrs it is ten, and is so far more conspicuous a detail as to raise with greater insistence the question, why a "solid web" at all. Most likely the true answer is that because the great arches of the Washington Bridge over the Harlem show the solid web, and that is the most admired of modern engineering works in this country. There is no question that the admiration is deserved. But there may very well be a question whether this detail has anything to do with the admiration, and still more whether it has anything to do with the admirability. The very word "web" denotes a mesh rather than a plate, and the solidity denotes a massiveness which in the first place does not exist. The web of the Washington bridge arches is but three-eighths of an inch thick, and its sole structural function, as I am instructed, is to prevent the deformation of the arch under moving loads, a purpose which would obviously be as well accomplished if each voussoir were a frame instead of a plate. In the next place, the massiveness, if it did exist, would be unsuitable to a material of great ductility, which shows at its best when it is attenuated according to its own nature, and not massed in the way proper to masonry. Every beholder of the Washington Bridge must be conscious of a certain incongruity between the solid web of the arches, of which the real structure is the enclosing ribs, and the gossamer lightness of the spandril bracing, of the same material. If the one treatment is right, he must be moved to say, the other must be wrong. In the present case, the designer has avoided this contradiction. The masonry-like massiveness is substituted for the metallic abstraction of line in the spandrels as well as in the voussoirs. A facility for doing this has offered itself, in the production through the spandrel of the roadway of the lower deck, which was not present in the design with which we are comparing it, since that is for a single deck bridge. Granting the premise, which we have declined to grant, that metal should be treated as massively instead of as tenuously as possible, and it will be admitted that the facility has been



CENTRE OF DESIGN NO. 2.

Professor W. H. Burr, Engineer.

Edward Pearce Casey, Architect.



HALF SECTION, HALF ELEVATION OF MAIN ARCH OF ACCEPTED DESIGN.

Professor W. H. Burr, Engineer. Edward Pearce Casey, Architect.

turned to very good account, and that the treatment is throughout consistent with itself. The piers and their arches are both impressive and expressive, impressive because they are expressive. They mark, quite unmistakably, that each of them is not an intermediate feature, but the end and abutment of its respective structure, and their disconnection is emphasized, instead of being denied as in the central feature which we found the chief blemish upon Mr. Hutton's design No. 1. This also would have been accepted as worthy and adequate.

One can readily understand, upon aesthetic grounds, the preference of the board for the central piers of this design over the corresponding features of the design which in general they preferred to it. The Roman triumphal arches have indeed a massiveness which fits them so far for the purpose to which they are here applied, and the modelling of them is very well and studiously carried down from the roadway to the water's edge, in a substructure in which the designer was thrown more upon his own resources. But to copy a Roman arch in the abutment of a modern bridge is a confession of national incapacity which one would not like to see made in a memorial to American patriotism. And besides, the Roman triumphal arch is not appropriate to the present purpose. It is an entrance, which, if it had any place in such a structure would find it at the end, possibly at each end, but certainly not in the middle where not the entrance but the "load" is the main thing and the opening a detail instead of the prime object of design. And certainly two arches of Constantine, Titus or Dewey would be intolerable in the middle of a modern memorial bridge, confronting each other across its draw span.

It is not so easy to find aesthetic grounds for the board's preference of the second to the first design of its authors for the bridge proper. For the accepted design is, in effect, a combination of the piers of No. 1, with the bridge of No. 2. The practical ground of preference becomes plain enough when it is stated that there is a difference of half a million in favor of this design over the first of its authors, and of two millions over the corresponding design of Mr. Hutton. But then economy and stability were by no means the only qualities to be taken into consideration. Nobody doubts that a "tool of transportation" could be provided which would enable men and other animals to cross the Potomac at this point, in sufficient numbers to supply the demand, for very much less than the estimated cost of the cheapest bridge in the competition.

Superficially and apparently, the accepted design is noteworthy in the competition, and unique, except for one other to which we shall come presently, for not being an example of modern engineering at all, excepting the draw span. This is manifestly enough a modern



THE ACCEPTED DESIGN.

Prof. William H. Burr, Engineer.

Edward Pearce Casey, Architect.

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metallic construction. But the six flanking arches appear as works of solid masonry. Merely to look at them, they might have been built seven centuries ago by the methods then in vogue. Their span of 192 feet would always have been unusually large, but by no means constitutes a "record." It is inferior to that of the stone arch across the Adda (251 feet) which was built in the fourteenth century, and stood until it was wilfully destroyed in the fifteenth. It is inferior also to that of the Washington aqueduct over Cabin John Creek (220 feet), and to that at Chester (200 feet), which are works erected within the era of modern engineering. Of course it is no discredit, but contrariwise, to the designers of the Memorial Bridge that they established their spans with a view to convenience and appearance, undisturbed by the desire to make or break a "record." I mention the dimensions simply to show that there is apparently nothing in the arches of the bridge at all beyond precedents, both structural and architectural, nothing apparently experimental. It is only when it is explained what the actual construction is that one sees that the bridge is an example of the most modern engineering; is, indeed, like the familiar "skyscraper," an example of "steel-framed construction," with a veneer of masonry and of architecture. The half-section, half-elevation, clearly explains the construction, the practical sufficiency and durability of which are, of course, technical questions for engineers. They have been favorably answered by the board, which explains, that the "Melan system" of combining steel and concrete has been employed in like structures with satisfactory results, though the widest span hitherto constructed on that principle in this country is but of 125 feet, against the 192 proposed for this work.

The question which remains is purely one of feeling, whether, in a monumental work, a construction should be asserted, for architectural purposes, which is not the actual system. There does not seem to be any insuperable obstacle to the architectural expression of the actual construction, although, of course, an attempt to express it would put the designer much more upon his own resources, and disable him from following the precedents of purely masonic construction, as he is enabled to do by assuming that the stone arch is not merely skin deep, but extends from face to face. To make the system of combined steel and concrete presentable and attractive would without doubt be an ambitious and arduous attempt, and one does not wonder that the designers should have shrunk from it. There is, of course, an alternative. That is to resort to the actual construction which is used in the visible mask. Evidently that course presents no insuperable obstacles, since the design judiciously stops so far short of the record for actual stonework. It is merely a matter of expense. And the question may

very well arise whether the United States, in erecting at their capital a "memorial to American patriotism," in the form of a bridge, cannot afford to make it what it seems.

One result of the adoption of a structure apparently of masonry is that the work ceases to be a monument of artistic engineering, as we commonly understand the term, and becomes an example of conventional, in the sense of abundantly precedented architecture. The common distinction between architecture and engineering according to the purpose of their respective works is evidently conventional. There is no reason why a bridge should not be a work of architecture as well as a house. A truer distinction is rather that an engineer works in metal and an architect in timber or masonry. In these bridges it is plain that the engineers are the designers of the steelwork, and their respective architects of the stonework, and it is only by the metallic structure that the artistic qualifications of the engineers can be appraised. Apparently the architect is the sole "artist" concerned in the production of the accepted design for the Memorial Bridge. At least it is the training of an architect and not of an engineer that is concerned in the appearance of the work, in which the function of the engineer is the same as in the commoner steel-framed structure of the skyscraper, to provide a sufficient skeleton which the architect thereupon proceeds to pad out and fill in with flesh, or rather to cover with integument, and as in the case of the skyscraper, it is only the architect's work that appeals to public attention, that of the engineer being of an esoteric and technical interest merely. The one piece of evident engineering is the design of the draw span. The recommendation of the board for "the substitution of a curve for a right line for the under lowest part of the draw" has been observed, and the bascule arrangement is thus more clearly indicated than in the straight truss of the competitive designs, which, as has already been suggested, seems much more appropriate to a vertical lift than to the actual device. The fact that the bridge proper and the approaches are all of apparent masonry gives the work undoubtedly a more homogeneous aspect than belongs to the evidently mixed constructions, while the bridge proper is yet carefully and successfully distinguished from the approaches. The number and span of the great arches have apparently been determined by architectural considerations. At any rate they are architecturally successful. To have reduced the number to two on each side, as was proposed in the third project of their authors, would have been to flatten them to a degree that would have made them less expressive and less effective. The actual proportions are very satisfactory. Distinctly another improvement over the third design is the omission of the attempt to lighten the spandrels by rows of arched niches, shortening with the rise, a



CENTRE OF DESIGN NO. 3.

Professor W. H. Burr, Engineer.

Edward Pearce Casey, Architect.

method which diminishes the apparent importance of the arch ring itself. Equally judicious is the omission of the irrelevant and meaningless panelation of the spandrels shown in the diagram that expounds the construction. Upon the whole, it will be agreed that the adopted design, as modified, promises a satisfactory result. The only question that remains is that we have already raised. whether in a monumental work, and national work, the United States could not and should not afford the actual structure of masonry which the adopted designs simulates. In this case, however, it would remain true that the bridge would be an example of historical architecture rather than of modern engineering. Of course that would be nothing against it. But it would deprive the structure of the particular interest which has induced us to give so much space and study to the competition, the interest of an essay in what can be done towards raising the works of modern building in metal to the rank of works of architectural art.

The design of Mr. Buck and his architectural associates shows little of peculiarity in its main dispositions; little, that is to say, which does not appear in one or the other of the designs we have already considered. It agrees with Mr. Hutton's No. 1 in proposing a single arch on each side of the draw span. The designer, however, includes in the bridge proper the two flanking granite arches on each side of 100 feet span. By introducing these intermediate features and by advancing somewhat towards the centre the outer piers of the large arches, he has contrived, with the same width of draw span, to reduce the span of these to 355 feet against the 550 feet of Mr. Hutton's proposal, and, as they are of practically the same rise, they become, architecturally, more tractable. But this advantage is not gained without a sacrifice. The intermediate feature of the two arches in granite is divided with equal emphasis, and by identically the same device, from the bridge proper and from the approaches. This device consists of a pair of massive towers on each side of the roadway, at each end of the intermediate feature, repeating, on a reduced scale and by way of "imitation," the form of the great piers which flank the draw span. The repetition is judicious and effective. But the double repetition gives only the same abutment on one side for the great 355-foot arch, as is supplied on the other for the arcade of 75-foot arches of the approach. There is thus a confusion as to the actual end of the bridge proper. Doubtless it would be possible to treat the whole intermediate feature as the ultimate abutment of the bridge; but this cannot be said to have been achieved here, the wider granite arches being no more massive than those of the approach, and being even, by reason of their greater span, less massive in appearance. There is another very questionable feature in the proposal to make the

spandrel bracing of the great metal arches with web plates, instead of the more usual skeleton. The designer's explanation sets forth that this is done in part "because it is thought to harmonize with and carry out the substantial character of the masonry arches." We have already given our reasons for holding that this consideration is illusory, and that a massiveness which is only skin deep cannot be a suitable treatment of a metal construction, in combination with masonry any more than when employed by itself. In this case, it has the disadvantage of foregoing all the effect derivable from a frank expression of the nature of the material, and of the attenuation and articulation proper to it, by which the structure is represented and emphasized by an abstraction of the lines of its actual forces and their working. Nothing of equal value to this can be obtained by covering the whole surface with an equal sheathing of metal, which to the spectator must be meaningless in comparison. On the other hand, the central piers and the reduced reproductions of them at the ends, are appropriate as well as impressive. These piers are the structure and their function as abutment, as "load," is powerfully expressed. The decorative adjuncts proposed and shown in the drawing, are evidently not parts of the design, and could be equally introduced with any other of the competing designs. When we consider that the estimated cost of this bridge is over three times that of the adopted design, and more than twice and a half that of Mr. Hutton's No. 2, and compare the probable effect of the three in execution, it becomes evident why the board should have declined to award it a higher place than third as a solution of their problem.

It is even more evident why they should have declined to give a higher place than last to the remaining design, that of Mr. Morison. The author of this design happens to be the engineer whose dictum we have been citing that a bridge is merely "a tool of transportation," with its corollary that, so long as it "functions," it does not matter what it looks like. He repeats it in this explanation of this design: "A bridge, in the common acceptation is a commercial tool built to convey traffic across a river." If it incidentally disfigures a landscape, and gives pain to every sensitive beholder, the consideration is irrelevant. So might a dealer say who disfigures a cliff with proclamations of his wares. The advertisement is a "commercial tool" erected to convey traffic to his establishment. The law, in enlightened communities, is beginning to restrain the advertising vandal, but there is nothing but the growth of enlightened public opinion to restrain engineering vandalism. There are peoples who decorate their tools. The Polynesian savage decorates not only the canoe which is his "tool of transportation," but also the war club which is his tool of controversy. Why an engineer who

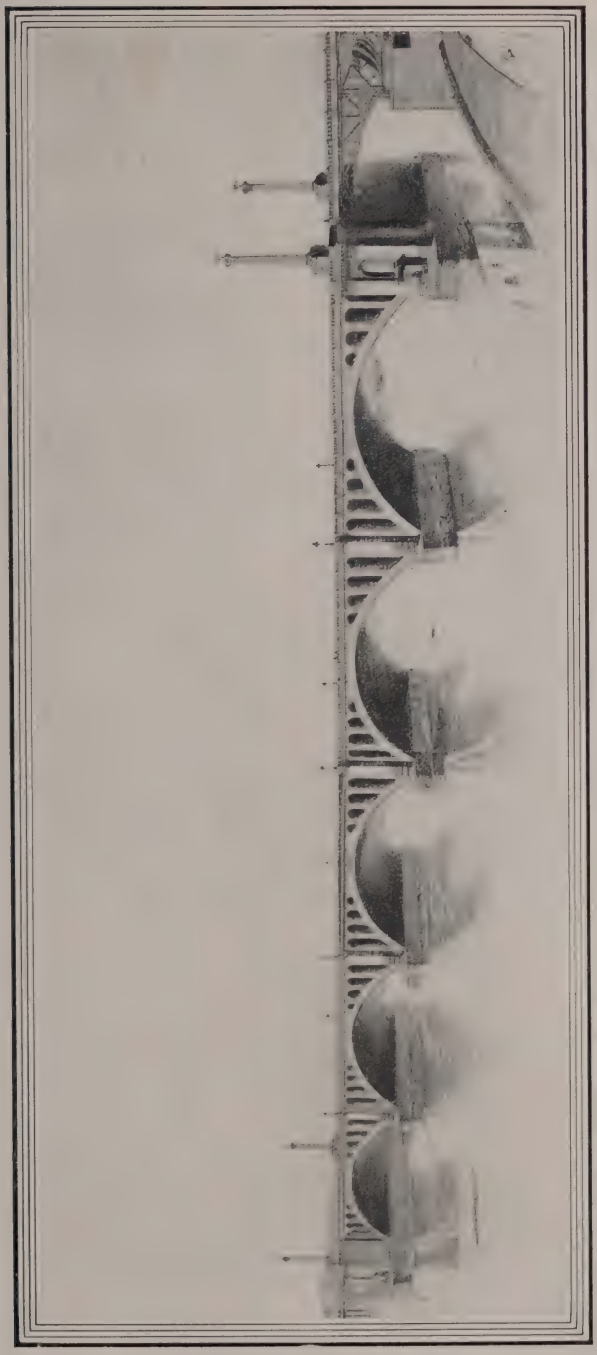


PERSPECTIVE OF DESIGN NO. 1.

L. L. Buck, Engineer.

Carrère & Hastings, Walker & Morris, } Architects.

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DESIGN OF GEORGE S. MORISON, ENGINEER.
(4th Prize.)

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takes the grimly and exclusively utilitarian view of his art should be invited to design a bridge which is also a memorial is not very clear. It cannot have been from any reasonable expectation that an engineer who had persistently maintained, and devoted by word and deed, his right to produce bridges without any reference to art, should suddenly blossom out as an artist. It may have been mere idle curiosity on the part of the Chief of Engineers, to see what he would do about it: "Do you know," as Mr. Pecksniff observed on a famous occasion, "I should very much like to see Mrs. Todger's notion of a wooden leg, if perfectly agreeable to herself." The curiosity, if it existed, has been abundantly assuaged by a demonstration that a long course of indifference to art is not a good preparation for the production of works of art.

The aesthetic basis of Mr. Morison's design is his two propositions that "the one material suitable for monumental work is masonry," and that "the condition of a draw, which is necessarily a mechanical contrivance, is entirely inconsistent with the restful ideas of a monument." These propositions are not exactly axiomatic. The first would lead to the evasion rather than the solution of the problem of artistic engineering in the modern sense, and like the accepted design, would result in an example of well-precedented architecture, rather than in the development of forms suitable to a new material and new modes of construction. As to the second, a flying buttress is "necessarily a mechanical contrivance," but that it is on that account "entirely inconsistent with the restful ideas of a monument" will be a startling and novel suggestion. Moreover, who ever thought before that the monumental effect of a castle was destroyed by a bridge which was also a draw crossing its moat, and another "mechanical contrivance" to protect its entrance:

> Up drawbridge, grooms! what, warder, ho!
> Let the portcullis fall!

But the adoption of these two dicta certainly would make the task of the designer of a memorial bridge very much easier. The combination of them has resulted in an unbroken bridge which completely closes the navigation of the Potomac River at this point. Five masonry arches span the channel, each of 180 feet span, cross the river and occupy the channel, with a headway of only sixty feet under the central arch. If the navigation of the river were of no account, doubtless a very impressive and even beautiful bridge could be erected on these lines, with massive and visibly adequate abutments at each end. But what makes the chief absurdity of this design is that after closing the traffic at the centre in the interest of the monumental character of his bridge, the visible sufficiency of abutment upon which the whole effect would have depended should have been withdrawn at each end, the massive arcade left "in the

air," a new channel been proposed to be dredged out at either end and this new channel spanned by the draw," which is entirely inconsistent with the restful ideas of a monument." Without any dispute this draw is so. Nothing could show a more complete and hopeless architectural helplessness and ineptitude than the whole combination. Even the author seems to have felt that something was required to express that his arcade exerted an outward thrust at its extremities, and that this thrust should be visibly met. But the means he has taken to meet it show the same almost pathetic and altogether comic helplessness as the general scheme. The terminal piers are somewhat more massive than the intermediate piers. But in the first place a parallelopiped is not the form of a mass which is to act as a buttress against thrust. In the second place, the most conspicuous increase of mass in these terminal piers over the intermediate piers, is not in the direction of the axis of the bridge, and so of the thrust, but in the form of lateral projections which are only indirectly efficient as abutments and not at all expressive of that function. The architectural benefit of an unbroken structure of solid masonry is thus denied tnd nullified by the introduction of draws at the very points where the structure should be most of all solid. But it is not worth while to go on criticising in detail an attempt so obviously crude and inept. It is quite hard enough to make good architecture when one devotes his life to it. Here is a conclusive, though superfluous demonstration that it cannot be attained by a designer who, for once in a lifetime, drops into architecture in an unfriendly way.

The designs which deserve consideration all follow the same general scheme. It does not seem likely that all the designers should have arrived at it independently, especially when it appears in a design that long antedates them. This is the design prepared fourteen years ago by Captain Symons and Mr. Pelz. It is, perhaps, a pity that this design should have been precluded from the consideration by the restriction of the competition to the four invited engineers, and by the appointment of the engineer-author as a member of the Board of Award. Certainly it would have been entitled to very serious architectural consideration if it had been entered in the later competition. Engineering advances so rapidly that it is possible enough that some part of the construction it contemplates may have become obsolete in the interval, and the architectural fashion in which it is composed has certainly passed away. But the force of expression in it is undeniable. In one respect, upon the importance of which we have been insisting, it seems clearly superior to any of the competitive designs, and that is in the functional modelling of the towers which flank the draw span. They may, perhaps, be unduly exaggerated in height, although the drawing in-



MEMORIAL BRIDGE PROPOSED 1887.

Capt. T. W. Symons, Corps of Engineers, U. S. A. Paul J. Pelz, Architect.

dicates that they have interiors which it is proposed to put to some practical purpose. But that their chief function is that of "load," and that the archway is a mere detail and not the main object of design, is expressed, as artistically as unmistakably, in the harmonious accumulation of their masses. The draw itself, too, is very successfully treated and has unmistakably what the board calls "the bascule form," more unmistakably than any one of the competing designs. Certainly this central feature is highly impressive and successful, and goes well with the flanking arcades. Comparing it with the corresponding features in any of the competitive designs suggests inquiry whether the functional modelling of the masses, which gives it its expression and its effect, can be so effectively done in the more formal styles which have succeeded as in the free architecture which reverts to mediaeval prototypes. Much of the superior picturesqueness of the towers, for example, in this design comes from the emphasis given to the ice breakers, and to the difference between the treatment of the "up-stream" and the "down-stream" faces of the piers. This is an obvious and logical source of architectural effect of which the later designers have forborne to avail themselves, preferring, it would appear, the maintenance of formal symmetry to the irregularity which an expressive treatment would have involved.

However all that may be, the competition has certainly been interesting and ought to be fruitful. In one respect, the view taken of it by the deciding body may be a disappointment, and that is in the choice of a design which belongs rather to architecture than to engineering. Not that the view of the board was not a perfectly legitimate view to take, but that the special purpose of artisticizing modern engineering, which to many students gave the competition its chief interest, is not promoted by the adoption of a design which superficially is not an example of modern engineering at all. Such works as the St. Louis Bridge and the Washington Bridge across the Harlem are at once equally works of art and unmistakable examples of modern engineering. May their tribe increase! But the competition should have its chief value in bringing about an increasing attention to the appearance of bridges, and in forcing engineers to consider the artistic element of design. This very competition shows us that eminent engineers may be entirely helpless when that element of design is introduced. It is not beyond hope that the looks of municipal bridges will come to be regarded of as much importance as the looks of other municipal erections, and even that railroads will come to consider the appearance of their bridges as well as of their stations. For these works the engineers cannot resort to the architects, but must rely upon themselves. When this happy state of things comes about, the question of the artistic

training of engineers will settle itself by resolving itself into a question of supply and demand. And then it will no longer be possible for a professed vandal to remain an eminent engineer.

Montgomery Schuyler.



The Decoration

of the

Smaller Suburban House

In England

BY

BANISTER FLETCHER



Interiors and Their Decoration

THE matter of interior arrangement and decoration is peculiarly important, because, at the present time, to design a house from its interior outwards is the legitimate goal of the best architects. The principle that "houses are built to live in, not to look at, wherefore prefer use before uniformity," was enunciated some three centuries before it has become an accepted axiom, and even now to many it remains a hard saying. It requires a high knowledge and perception of architectural effect to carry out the true ends of house-building, because unless the architect is able in imagination to, as it were, reside in each room marked out in his scheme, he is unable to realize what the internal effect of the whole will be before it has been built. Not many designers, however, seem able to carry the section as well as the plan, in their head, as it is at times only too obvious in the result, for it has happened that one side of a room is perhaps agreeable enough in its treatment, from having been the reverse of the principal elevation, while the other being only that of some back front not intended to be seen, is correspondingly maltreated.

To take an instance, it is very disagreeable to see one side of a room with mullioned lights and casements, while another has, perhaps, sash windows of the cheapest kind. Another case is where the style of glazing has been equally neglected, some windows being all leaded while others are in large sheets of glass, etc. To aggregate together a number of rooms each consistent and well-treated in itself into a complete effect—such as a work of architecture must possess—argues very great capacity on the part of the designer. It is, moreover, to enter into a region above the heads of the client and the amateur, whose criticism can rarely extend beyond the perspective and the simplest of plans. It will be a good training for the serious student always to cultivate the habit from early days of putting on, alongside his sketch plan or section, a slight idea of the elevation of each side of the room. This will

constitute an admirable check on the design of the façades, and will help the architect to realize his work.

It is, of course, only in the exceptional cases that such treatment is accorded to houses of the class that we have to deal with, but it represents an ideal that is not altogether unattainable. The immense increase in the number of architects has a tendency to render each work of more importance, while the pressure of rivalry tends to raise the standard of execution in all parts of the design. The elaboration of houses is now carried far beyond the pitch of, say, the early part of the century, because it is no longer a case of bestowing special treatment upon one or two reception rooms only but of planning suitable decorations for the bedrooms and often the offices also. The accompanying illustration of a kitchen is, for instance, by no means an isolated example, for in one great mansion it happened that the offices were the most delightful part to the student, because there only had the architect a free hand. House work is, and particularly so in the interiors, subjected to more interference than perhaps any other class of artistic work, surpassing in that respect even portrait painting! "Why, if it is my house, cannot it be as I like it?" and "I have to live in it," are the constant arguments of the client, and though Mr. Ernest George once said that the clients whims were a source of effect, still that dictum must, we may venture to assume, have been the veil that good nature draws over many past disagreables. When the public appreciation of architecture develops, as it may be expected to do, with an increase in the number of houses built by architects, there will doubtless be effected some working compromise between the wants of the client and the artistic aspirations of the architect.

A preliminary point of difference may be mentioned in dismissing this aspect of the question. It might not be popular with the obstructive class of client, but it would be necessary in some cases with a house of this class, that all the other rooms should be treated extremely simply, in order to make, say, the staircase hall the notable feature in the house. Conversely, it might be the drawing room, or dining room, or, perhaps a studio-study that should be honored in this way. Concentration of effect will be found closely allied with economy in a successful design of a small house.

Interior treatment to-day in England largely resolves itself into joinery of the highest class. The bare stone and brick ideal of the revival has given way to the greater comfort and homelier character of plastered surfaces, except where some special effect is to be obtained when panelling is resorted to. A few ill-advised attempts at marble work have been made, but principally in clubs, and the general feeling is distinctly against such cold surfaces in our damp climate.



DINING ROOM, COLDHARBOUR WOOD, HANTS
(Residence of Sir T. Sutherland, M. P.)

T. E. Collcutt, Architect.

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Since the best joinery belong to the Queen Anne and Georgian periods (when in point of time joinery was first developed as a trade distinct from carpentry), it is natural that a later style has often been adopted in the interior of the house to that nominally followed in the exterior; and the effect is by no means always displeasing. We see it in many old houses, which at a later period were lined inside with the new joinery, the older mullioned windows being often replaced by sash frames shutters. The result is infinitely better than that obtained in the average Gothic revival house with its barren walls and meagre carpentry style of finishings. It was overlooked that in the Middle Ages the lining of the room was carted about from one castle or palace to another, in the shape of the splendid arras, that wholly draped the walls inside—even the door being covered. At Haddon Hall, the tapestry rooms are quite a lesson in the use of hangings. The art of joinery is to some extent a practice of economy; and to use the material to the utmost extent and not to waste it in heavier scantlings than are needed involves some acquaintance with workshop methods and considerable study of old examples.

A prejudice against steam joinery must, we think, be abandoned in the case of houses of this class, and it will be desirable to vary no more than is absolutely necessary the designs of the doors. The design of a really good paneled door is quite worth repeating to the extent that one house requires, and if there is no occasion to make the widths and heights of the openings different, there is in most cases no special call for a fresh design. To design, however, doors in relation to their openings, their uses, or to some peculiarity in their position adds an extraordinary interest to the interior of the house. Service doors, for instance, are too often disguised as part of the wall in which they occur, whereas they may afford a chance of giving importance to the chief door in the room by their subordinate treatment. Wide panels are at present decidedly in favor, and the chance of their splitting is apparently accepted with equanimity.

The American woods, now so freely imported, have enabled us to obtain much excellent and cheap joinery, both the white and yellow pine and the walnut being in every-day use. For large panels cedar and sequoia are excellent materials, though rather soft for rough usage. In wide-panel panelling, the backs can, of course, be canvased, which is a great protection.

Shutters are a great source of expense in small houses, and very difficult to dispose of, where the walls are thin. Rising shutters are really only fitted for a cottage, they are very ungainly, troublesome to work, and extremely noisy. There is much to be said for outside shutters if some protection is insisted upon. In old cot-



DINING ROOM IN RESIDENCE OF HERBERT PETO, ESQ.
(Westgate-on-Sea.)
Ernest George & Peto, Architects.

tages the two-panel folding outside shutter is a familiar feature, and it would be quite as suitable for a house of this class, while the French outside louvre shutter is also available.

If solid frames of wood or stone are used, it is often best to carry round the plaster without any lining at all, and if the walls are to be papered all mouldings on angles should be abolished, and the paper surface carried as a sheet throughout the room without breaks. Arches and girder beams in particular should be so treated, which is as mosaic is used in Byzantine church, for example, and this principle avoids many difficulties in the junction of the paper and any plaster mouldings where these have been used either on angles, on the soffits of arches, etc.

In the same way, in rooms of low height, the cornice and skirting may both be dispensed with. In panelled rooms, the skirting is particularly unnecessary. In fact the importance given to skirtings is a relic of the former predominence of the classical style with its now discarded system of subdivision in the treatment of walls. The picture moulding is a great enemy to the cornice, which it necessarily supersedes in many cases. In a small room, it should be fixed about two inches down from the ceiling line, where it will form a perfectly adequate substitute for the heavy plaster cornice and a good stop for the wall papers. We have had such an orgy of plasterers' coves, cornices and hollows, that a square edge against the ceiling strikes us as quite an effect.

Ceiling treatment is naturally rather limited in small houses, but we may in passing protest against a vulgar assault, lately made by an advocate of decorative plaster work, on the ceiling paper as an exclusively suburban joy. Except where the ceiling paper pretends to be otherwise than what it is, a papered surface, it is to be prized from its capabilities for both design and color. In cool tones it will effectively aid a strong hued paper or vice-versa, while in rooms lit from one end only, ceiling papers printed with reflecting metallic grounds will often be found of great service. In our view it is a mistake to paper the small panels of a much-divided ceiling. A ceiling cut up into an elaborate pattern by moulded ribs as in, say, an Elizabethan manner, is sufficient ornament in itself for the room, without the added decoration of the surfaces between being filled in with additional design in the shape of a patterned paper. It is in the mass that a paper tells, for smaller surfaces stencil or painted designs are required. In ceiling treatment, division by mouldings is a difficult matter because scale and flatness in section are so rarely observed. For mouldings in plaster with a slight projection are essential, and the same remark applies to the large beams, which will probably be visible in some of the larger rooms owing to subdivision in the floor above. Too often ana-



BILLIARD ROOM, BEDFORD PARK CLUB.

Bedford Park. R. Norman Shaw, Architect.

glypta or some other composition wall hanging is used to imitate the effect of such moulded ceilings, especially now that these fabrics are produced in high relief. Machine-stamped hangings are unobjectionable when patterns can be obtained that are in harmony with the method of manufacture and are not merely cheap imitations of a superior material.

In mechanically produced decoration, extreme conventionality is required, as illustrating the remoteness from the pleasure of freely executed hand moulding or carving. The whole range of ornament based on geometric design seems specially applicable to cast or stamped machine-made goods. For instance, a grating in cast iron of such a pattern is infinitely preferable to the floral scroll designs that are not only unsuitable to the material, but also displeasing to any one possessing sufficient knowledge to be acquainted with the origin of such styles of ornament.

It seems a digression, but this is a place to add a remark that nowhere is it to be observed so much as in small houses, that artistic effect is independent of the wealth of the materials employed. Consistency in design and the use of harmoniously simple materials will make a small house, within the limits of cost laid down, more pleasing to the artist than all the costly display of the millionaire's palace. No one need, therefore, despair of producing a good result in spite of the apparent inadequacy of the materials and money available. Cheapness may be a merit but must not be an excuse.

We have touched upon joinery and plaster work as affecting the interior, for masonry there is nowadays not much scope. It will probably be limited to one or two chimney pieces of some elaboration for which a colored stone is desirable if hard limestone or marble cannot be afforded. The difficulty of using stone in the interior of a small room is great, unless the architect has the courage to do as was done in the Middle Ages and decorate it. In Cardiff Castle, the late Mr. Burges has produced an extraordinary effect by his highly colored mediæval interiors. There the masonry is all painted, the sculptured mantelpieces having the figures colored after nature, to the extent that in the larger heads glass eyes are even inserted. In Mr. Bodley's interior work the masonry is nearly always painted, and it is certainly very difficult to do otherwise with stone in the highly-finished rooms of modern houses. The coarse texture of stone is unpleasing against a modern wall paper for instance, besides which as a material it is very apt to be absorbent and thus will soon become what the housewife will call dirty; after which that chimney piece will certainly retire behind a cloud of drapery. Probably for some such reasons wood mantels have become so universal as to add still further to the large share taken by joinery in the interior treatment of the house.



ENTRANCE HALL, "WATERSIDE," WESTGATE-ON-SEA.
Ernest George & Peto, Architects.

preferred if such display is contemplated; and few things in the way of patterns are better than the old style of black and white in alternating squares as a foil to good joinery.

If we look for a moment at the general question of flooring for the best rooms, we shall find that parquetry, hardwood, and stained deal floors divide the field between them. Parquetry seems to us inferior to hardwood, which with us generally means oak flooring in narrow widths, say three inches, with grooved and tongued joints. Block floors are rarely used except for the kitchen and some offices in houses of this type. Stained deal floors are, however, in request because the old-fashioned Brussels carpet cut to fit into every corner has been displaced by the modern art square, which is woven with a border and can be obtained in most ordinary sizes. Better in many respects than the art squares is the self color homespun that can be made up and leave any margin required, and which, by its absence of pattern, is often a very agreeable relief in the highly decorated rooms of to-day.

We are not desirous of plunging into questions of furnishing except to the moderate extent to which an architect is likely to be concerned in the average house; but there is one important question to which he can hardly remain indifferent, namely, that of the limit of pattern in an interior. We think that a silent revolution is taking place upon this subject at the present time. We suppose that the late Mr. William Morris would have declared in favor of pattern throughout, for a characteristic interior in what for convenience we might call the Morris style would in fact have in ceiling paper walls, curtains, blinds, furniture covering, and carpet as many varied conventional designs; owing their harmony to a great extent to the fact of being the work of one designer, or at least of his school. But although such harmony can be and is obtained by the choice of good coloring, to particularize one most important condition of success, still it remains an artistic problem whether such an extensive use of pattern is really good. There seems very little artistic justification for such a prodigality of invention as all these different designs demand. Of course they are easy to obtain, thanks to printing, but imagine a house in this style as the outcome of a man's own work! Why, one room alone would take years of an artist's life.

To-day at any rate the reaction seems to have set in, for materials in self-colors as they are called are in demand for wall papers and fabrics, so much so that even the deep wall frieze which is usual in such interiors is often only a plain paper in another color. Design, too, takes the form of highly conventionalized patterns on an open field with an effect almost like old stencilling, a sufficiently striking contrast to the luxuriant foliage of the last decade. Work of this kind is honorably associated with the name of Mr. Voysey.



BILLIARD ROOM, ROYAL CLYDE YACHT CLUB.
Hunter's Quay, N. B. T. L. Watson, Architect.

In modern interiors of this severer type, you can at any rate hang your pictures, which is very difficult if not impossible in the highly-patterned rooms. No doubt interiors are generally over-pictured, and it is pleasant to see interiors furnished in effect by the walls themselves, as are old tapestried rooms in which in fact pictures could not be hung; at the same time the Morris style of paper is apt to be sometimes a trifle aggressive, if you do happen to have some cherished trifle of a picture to hang upon your walls. It is a curious note of the times that for bedrooms crockery can now also be obtained in self-color, in place of the once universal printed ware, so that with plain tiles also available a bedroom interior can be made quite a study in flat tints.

Throughout we have assumed the joinery to be painted white, as that has become usual in small houses, in the composition of which very little hardwood enters, while the deal woodwork is practically always finished in paint, except in such instances as where the lately fashionable green or vermillion stains have been preferred. The use of white paint in these interiors is really necessary in the face of the strong and usually contrasted colors employed, and it is as well for the architect to realize this at the outset, otherwise he may find himself deprived of the essential white element in his scheme by the prevalent strength of modern coloring.

This characteristic of modern English houses has struck French critics, thus Monsieur Sédille, who has made a study of color in relation to architecture, spoke of the "tous éclatants" of our interiors, and to any one familiar with the tone of color used in average French houses, the contrast must seem sufficiently striking. It should be said that at the present time, particularly in the Glasgow school, owing probably to the influence of some great French painter, a cold tone of coloring for decorative work is being revived and may probably be extended, carrying still further the reaction against the work of the last decade.

A further element of white enters into the design of the interior where fitted furniture is employed. Fitted furniture is well within the province of the architect, for nothing so spoils an interior as a large and badly designed fitment, quite out of scale with the details of the room. It has, too, a permanency that makes its character less discounted in a survey of the interior than would be the case if it were but a piece of movable furniture in the ordinary way. But there is a good deal to be said against, as well as for, such fitments. After having been somewhat special they are now the province of the trade upholsterer, who is specially great at combining the fireplace with a seat, a washstand with a wardrobe, in one expansive piece of cheap joinery, lumbering up the whole side or angle of a room. Fitments in an artistic sense seem limited to recesses,



A DINING ROOM, BEDFORD PARK. R. Norman Shaw, Architect.

Bedford Park.

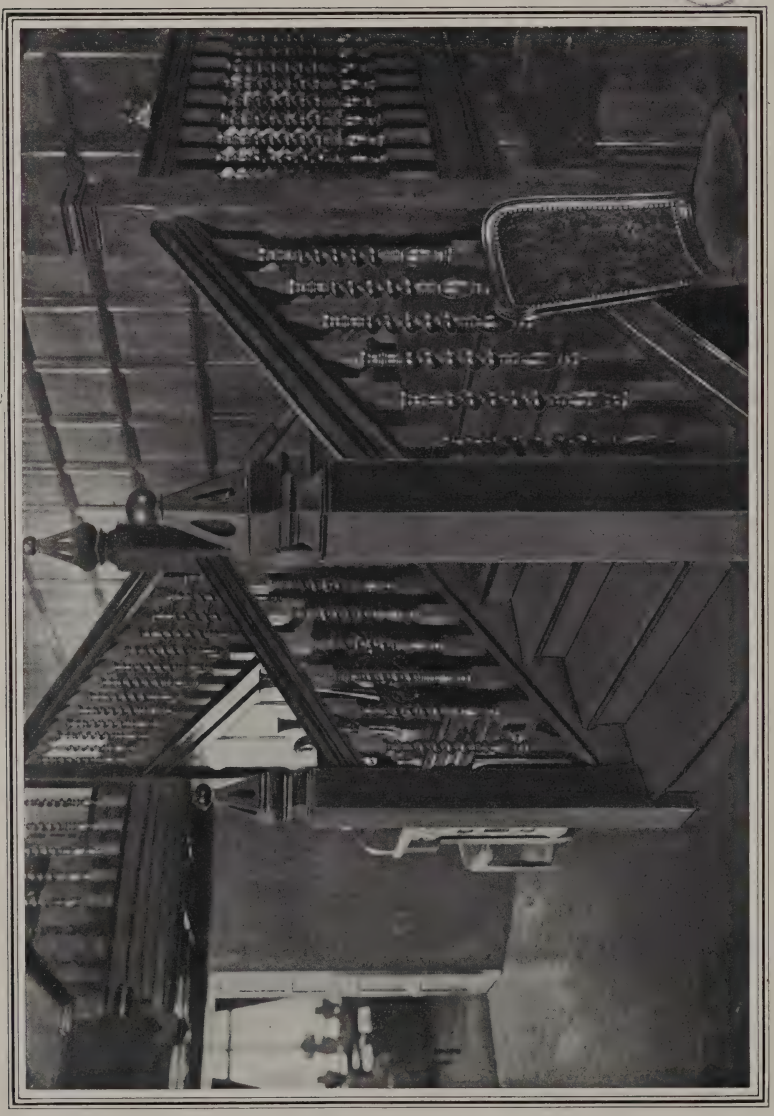
it seems logical to carry through the plane of the wall rendering useful any space obtainable behind.

Another limitation seems to be that of a severe test of practical utility. Thus a tiny cabin on board ship may look very well from an instinctive feeling we have, that every part has its special need and purpose, but a large room partially fitted up in such a way will seem absurd because the motive of restricted space is obviously non-existent. In old large panelled rooms of a fairly late date excellently contrived cupboards often exist, accessible by opening the panelling itself, when the recesses are perhaps seen treated in niche form with shells in their heads so that if the panelling chances to stand open a pleasing appearance is still retained in the room. The modern fitment, however, is too often contrived, not for the special needs of the owner and uses of the room, but merely to dazzle a purchaser with the apparent cleverness and convenience of mixing up a few of his books with the bulk of his clothes, while an impracticable wash stand is to be found stowed away in a corner beneath. To be effective, the whole room should be fitted and from that derive its architectural treatment, leaving only chairs, say, one table, or bed, if in a bedroom, in the centre.

It is a question moreover if the ordinary person is sufficiently neat to make effective use of elaborately fitted furniture. It is essentially a personal matter and seems for success to require a client with an exceptional knowledge of his wants. Overmantels are fitments on a small scale, now fortunately in a state of decline. In the original idea, as in the angle fireplace by Mr. Norman Shaw, illustrated, they may be excellent where carried out with a sense of the limitations of the chimney piece and some perception of architectural fitness of design, but they have long since become the joy of the art furnisher and fitter and hence need no further comment. The peat mirror over the fireplace, the chief feature of the interiors of the first half of the century are also under a ban, and for very good reasons. Mirrors on that scale are for salons for the reception of the company perhaps, but not for rooms to live in. Nothing, for instance, is more annoying than reflecting surfaces in front of a reader with an overhead light behind him. Deadness of surface is one of the reasons why a panelled room is so attractive and pleasant to live in, and to-day some of the best chimney pieces executed are modelled on the tall type of ancient Jacobean examples in wood, where all the space above the fire arch is disposed of in delightful panelling. See the panelled room by George Devey, illustrated.

Coming now to the house interior in separate detail and bringing together the ideas of treatment suggested, we might commence with the entrance, regarding, however, the porch as part of the interior. Of all the difficulties that the interior treatment of such

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STAIRCASE, COOMBE COTTAGE. George Devey, Architect.

houses presents the small size allotted to the entrance and staircase is the greatest. We illustrate a hall staircase, a staircase on a large scale, and a more restricted stair and passageway as showing some modes of treatment that might be aimed at. It is to be understood, as before explained, that elaboration is not to be adopted in all rooms alike, but that without beggarly and careless plainness in the rest of the interior some one hall or room might be selected for treatment as the feature of the house. If the hall is used as a room and furnished, a wood floor would be preferable to any form of paving in this climate, and wood for the staircase is also practically the rule. "Close" strings have taken the place of the "cut" form with the returned nosings, but occasionally the latter form is used for the sake of the old style of carved scrolls or console brackets that may be seen occupying the spandrel end of each step. For the balustrade turned balusters are usual, though a preference is sometimes given to cut, and perforated patterns in, say, 1½ ins. to 2 ins. thickness, of wood, and 3 ins. to 6 ins. width, but wrought iron work and carved wood solid or perforated panels are rather excluded by considerations of expense. A small detail in connection with the hall is that if the position of the house borders sufficiently upon the open country, it may be pleasant to have the outer door hung in two heights, of which the upper will generally be left open, which often proves very pleasant in summer time. In the hall and best rooms adjacent, high class furniture is effective and small brass cased rim locks with curved lever handles are attractive. Here, too, should be one of the best fireplaces the house can afford, and if the plan provides an angular position an added opportunity for effect is secured. One of our illustrations shows an admirable angle fireplace. The opening to the staircase from the hall where the same is not comprised within its area, affords a chance for a screen or arcade in wood, or, perhaps, for some original arrangement, such as the dwarf column on the high shaft pedestal shown in the illustration.

The drawing room is usually an affair of wall papering, of large window areas, with a general atmosphere of furniture and flowers. It is the ladies' room, and architects are not always admitted. The fireplace, however, will probably be of importance, and here marble and tiles are likely to be in evidence, the ceiling also may well be treated if plaster work can be afforded. The dining room more often receives a special treatment, if panelling be used it is likely to be found in this room, and the higher it can be carried up the wall the better. If, however, this is not possible, the upper part may be formed into a frieze. In the dining room more than anywhere else the recessed fireplace, if there is to be one, should be placed. It adds greatly to the facility of service in the room, and often be-

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ENTRANCE HALL—RESIDENCE AT BEDFORD PARK, LONDON.
R. Norman Shaw, Architect.

Bedford Park.

sides, to the comfort of the guests, if the fireplace is thus set back, outside the working area of the room.

In regard to the treatment of the ceiling, in the case of a well panelled room, absolute plainness can very well be adopted, but if plaster work is used, all-over Elizabethan designs, as of strapwork, are more effective, we think, than subdivision by wood mouldings where there is so much woodwork below. Exposed floor joists require more material than may be available, because wide, flat, close-set beams are essential to success.

Wood-lined ceilings, however, are feasible and effective, if divided out by suitable mouldings and set with occasional well-carved bosses. In the dining room, moreover, hardwood is desirable for the floor, a border being nearly always shown, as Turkey carpets retain their preference for this apartment. The old sideboard recess is not much used, and where it exists is usually very simply treated; if, however, a late Georgian style prevails, the old flanking columns and classical treatment retain their characteristic effect and are worthy of adoption. If much brass work is found in drawing room, copper may well prevail in the dining room on the lines suggested above, while if any color is introduced into the windows coats of arms will be highly proper in this apartment.

The third reception room may well have been the furnished hall already described, but if it be a separate room much will depend upon its proposed uses. If it is to be a boudoir, deal panelling painted white, with some special cupboard fitments will prove attractive, while if it is to be the library, the bookcases you expect to find there might call for some elaboration. If the owner has an obliging painter friend it is in this room that the decorative subject frieze should find a place; coming above the book cases, it completes the scheme and carries out the idea of a room with special characteristics. The books suggest subjects for treatment in the paintings, or if the painter be an opponent of the literary influence, his frieze may be made to afford a counter attraction, pitting the ideas of action against those of thought.

A billiard room, however, may be preferred to any study, and we illustrate an example possessing a special character as being practically in the roof. Billiard rooms have become far too stereotyped in arrangement and construction for which, as far as we can see, there is no real necessity. The method of lighting adopted in this example also suggests that the somewhat intractable lantern is not always indispensable.

After the reception rooms come the offices, and here the architect's artistic powers are to be tested, because by the greater or lesser extent to which the small opportunities that they offer are turned to account, we can estimate his capacity of creating some-

thing out of next to nothing. Many can shine with ample means, but few are able to dispense with the trappings of wealth and charm by simplicity alone. We illustrate a special kitchen interior which, though part of a far larger house, still suggests what can be made of such a room when it is a subject of consideration.

The upper floors will find their central attraction in the head of the staircase which needs the most careful attention. Lanterns and skylights we have deprecated, but if the house be in a late style, a coved ceiling approaching to a square dome will have much character, while in an elaborate example, a domed interior on a small scale with upper gallery, etc., might be attempted. In old city houses of classical type some very clever examples of such features may be seen, adding great interest to the interior. Mr. Norman Shaw has done some work of this kind in some of his later houses as in the revived Queen Anne house in Queen's Gate, London. This sort of thing demands great care, because on a small scale it has a tendency to become ridiculous.

In relation to the staircase head, the passages here and elsewhere ought not to be neglected. A happy proportion of width and height in section and a clever disposition of the windows lighting it may often make an interesting feature of this too often neglected part of the interior. The bedrooms ought to be very attractive, for it is such a point in the present day to possess an interesting bedroom that the house will be sadly lacking if these apartments are neglected.

The wall papers are likely to be the chief feature of the decoration, unless fitted furniture be added on the lines already suggestively laid down. The fireplace demands attention and a wood mantelpiece enclosing tiles and a metal fronted grate will be usual. The tile hearth requires to be ample both for effect and safety, a point which is often neglected. Cast iron mantelpieces and grates, if of good design, will be advisable for the less important rooms and are of every-day use. The bedsteads in the best rooms may well be a feature; for this purpose nothing can be better than the revived wood pattern, as made nowadays it is quite unobjectionable on sanitary grounds, all the underneath part being of iron frames and springs with head and foot framework only in wood to design. There has come to be somewhat of a hospital look about the French iron or brass bedsteads and others in a good room, such a bedstead rarely looks equal in importance to the place it occupies and the area of the room that it takes up.

Generalizing bedroom treatment we should add that stained margins to the floors are desirable, and enamel-white woodwork. The ceiling may well be plain and much ornamental work is to be deprecated. It might easily be necessary at very short notice to efface all

the decorative work by a thorough cleansing process. Health in the house to some extent centres in the bedroom. This concludes our tour through the house and winds up a subject which, however inadequately we may have treated it, seems to us one of the first importance for the extension of artistic methods, and the treatment of our smaller houses is one of the most pressing needs of the time.

The small house must be rescued from the hands of the merely commercial speculator and receive some treatment according to the characteristics of the individual who is to be its inhabitant.

Banister Fletcher.





PLATE I. BLICKLING HALL.—West Front, looking on the outer court. Of the porch itself there will be further mention below. The general character of the west front is so far successful as a façade that with a belfry tower strictly in style and of worthier material it might be very imposing. The width between the square towers is about eighty feet. This space is occupied by the great staircase hall with a double stairway of great splendor, with magnificent Jacobean carving and interesting statuettes on the newel-posts, and on each side of this a room between the great chimney stack seen in the photograph and the corner tower. It will be noted that these towers project by more than half their width from the front and by nearly their whole width (see Plate VI.) from the flanks of the house. The considerable length of the bridge (see Plates II. and IV.) can hardly be judged from the Plate before us, but the rounding projections on both sides where the bridge widens can be seen, and the amount of foreshortening partly judged.

A JACOBEAN MANOR HOUSE.

Blickling Hall.

BLICKLING HALL, Norfolkshire, England, is situated near to the small town of Aylsham, thirteen miles north of Norwich and nine miles from the sea at Cromer. The land is flat thereabout, and the house lies low, as do the neighboring mansions, some of which are of almost equal importance architecturally to this curious Jacobean manor house. The lake seen in Plates V. and VII. is stated to be a mile long, but the size of the park would hardly seem to allow of so large a piece of water. In spite of the low level, no attempt was made by the builders to raise the building out of the ground. A broad moat originally encircled the hall, much of which is still in existence and filled with water; it can be distinguished in Plates I. and II. This moat separates the principal (west) front from the outer court, and a bridge is carried on two low arches to the principal entrance doorway. The ground floor of the house is seen to be on exactly the same level as the lawn and drive, which occupy the outer court, without even a door sill making one riser at the doorway itself. All of this is in strict accordance with the custom of the seventeenth century in England; a custom which has not lost its hold upon the builders of village

houses even to this day, and which controlled the building of the houses on the streets of our older towns, such as Kingston, New York; and Charleston, S. C., where there is not even a moat to separate them from the footway in the street. The outer court is enclosed by the one-story buildings seen in Plate I., the arcades seen in Plates IV. and V., and the higher buildings of which a very small detail appears on the extreme right in Plate V. and on the left in Plate VII. There is, of course, an inner court, upon which there open windows from the great rooms, in some cases, or from staircases, corridors and subordinate chambers.

The house seems to have been built entirely in the reign of James I.; the guidebooks say that it was not finished until 1628, soon after the death of Sir Henry Hobart, who died in 1625 and who had been Chief Justice of the Court of Common Pleas; (for all of which see the Dictionary of National Biography). Of the older house in which the Boleyns lived and where it is thought that Anne Boleyn, second queen of Henry VIII. was born, no part remains or can be identified. It is probable that the whole house was built in the present style during the life of Sir Henry Hobart, although there is some legend of a rebuilding of the principal front after a fire in the eighteenth century. This rebuilding must have been confined to interior work and perhaps the replacing of some shattered stones; but the belfry tower which rises above the main entrance and which is entirely of wood and of a rather clumsy design may well be of the eighteenth century.

Except for that clock tower, the whole is Jacobean; and an admirable specimen of that peculiar style which, avoiding gabled roofs, used gables to replace dormers. Other characteristics are the abundance of glass in very large windows and groups of windows; the frequency of projecting bays, each occupied by a large window, and the free use of so much classic detail as the plain structure of walls and roofs would allow. Further remarks about this building will be found accompanying the plates.



PLATE IV. BLICKLING HALL.—This illustration shows the west front from the northwest in steep perspective, and here we understand better the form of the bridge as well as the amount of projection of the columns and door-piece, and the bay-window above. There is certainly a very successful piece of proportioning in the gradual retreat of these projections and in the placing of the statuettes above to correspond with the heraldic supporters below, the whole leading gradually to the wall of the gable. The success in obtaining an architectural treatment of considerable importance, and sure to strike the eye of every beholder, while yet the materials are of the simplest and the expense incurred in stone-cutting proportionally very slight, is certainly worthy of great admiration.



PLATE V. BLICKLING HALL.—Here we see the west front viewed nearly as in Plate IV., but in still steeper perspective and from a point beyond the arcaded masonry which corresponds to the one seen in Plate IV. on the right, and which is seen in the present illustration between the foreground arches. These two arcades enclose the outer court on the south and north, and the buildings of which a little is seen on the right completed the enclosure of that court. These are good two-story buildings, strictly Jacobean in style, but probably much modified or rebuilt in the nineteenth century.



PLATE VI. BLICKLING HALL.—View of the south front with the private or reserved garden. The high-raised path on the left bordered by densely packed masses of ivy is made upon the flat roof of an extension of the arcade seen in Plates IV. and V. The garden, therefore, is not sunk; its level is that of the outer court, but the raised platform of the arcade separates it from that court. It seems indeed as if the natural level of the land rose nowhere more than two or three feet above the lake, and was not altered artificially; only broken by these arcades and raised paths.



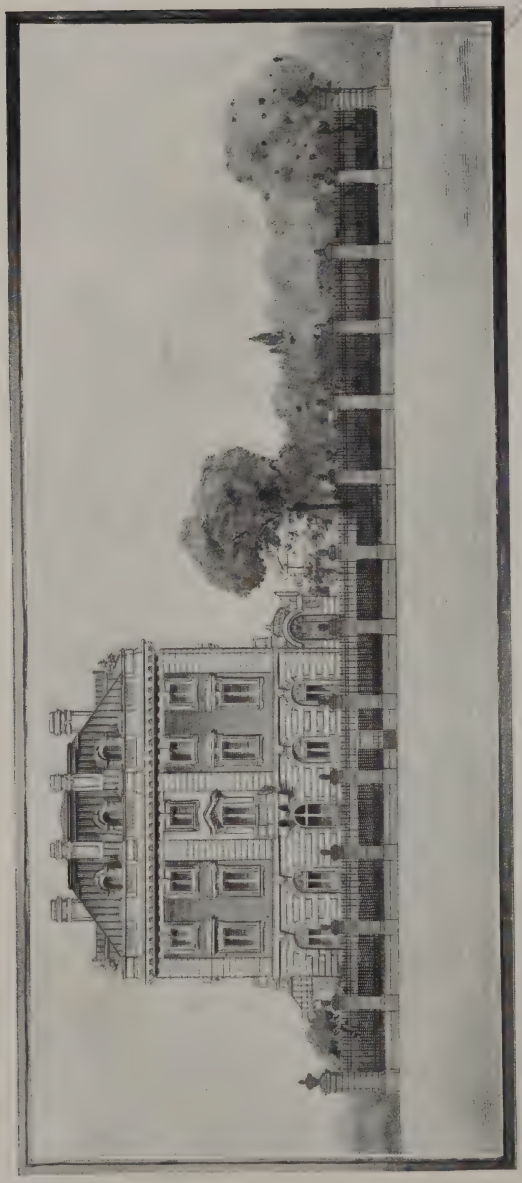
PLATE VII. BLICKLING HALL.—This illustration shows the south front again; but seen from a point much further toward the east, so that the wooden clock tower above the main entrance is shown for nearly its whole height. This front is occupied by the great gallery in which the library is preserved; see Plate X. A fair idea of the garden may be had by comparing these two views. With all its antique simplicity and real half-domestic charm, the design of the garden seems to lack significance.

ARCHITECTURE IN THE BILLIONAIRE DISTRICT OF NEW YORK CITY.



IR, let us take a walk down Fifth avenue." To be sure, Dr. Johnson never said that. But neither did he say "Sir, let us take a walk down Fleet street," as has been confessed by the person who for many years imputed that invitation to him on the cover of a London magazine. And the more modern formula is the more attractive, as will be admitted by all who have seen both thoroughfares in recent years. In fact, it is only this year that that part of Fifth avenue to which I shall direct your attention has become really and unfailingly amusing, the part from Ninetieth street down to Seventy-ninth. Hardy pioneers have, indeed, been building themselves houses there, at intervals, for pretty well a decade, and very good houses some of them are. But they have been coming, these early settlers, as "single spies." Now they are coming "in battalions." It is Mr. Carnegie's settlement at Ninetieth, which seems to have determined the movement and enabled the owners who have been holding on for all these years, in spite of taxes and assessments, to "unload." They ought to be very much obliged to that billionaire. If he had chosen to mingle business with pleasure, he might have made an uncommonly good thing of it, if, when he determined to establish himself at Ninetieth, then occupied by a "taxpayer" of a riding school, he had bought all the vacant Fifth avenue lots down to Seventy-ninth, and held them for the rise inevitable when it should transpire that he was to grace the vicinage with his personal presence.

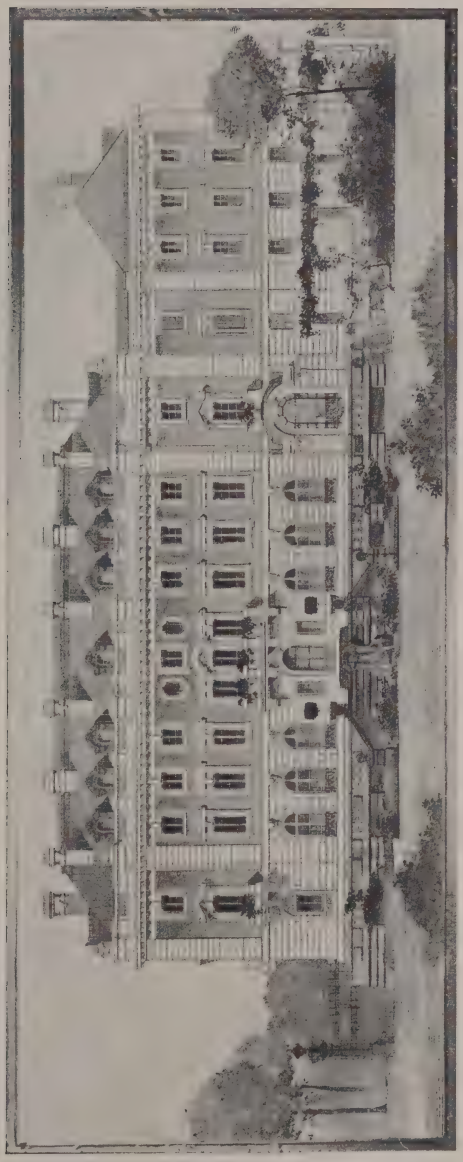
Beyond Ninetieth the movement has not yet gone. The castle of the hardy brewer who settled at Ninety-fourth or thereabouts,



WEST ELEVATION, CARNEGIE RESIDENCE.
Fifth Avenue, 90th and 91st Streets, N. Y. City.

Babb, Cook & Willard, Architects.

BOSTON PUBLIC LIBRARY



NORTH ELEVATION, CARNEGIE RESIDENCE.
Babb, Cook & Willard, Architects.
Fifth Avenue, 90th and 91st Streets, N. Y. City.

ten years ago or thereabouts, remains an almost solitary fastness. In fact, Ninetieth street is at about the summit of the long rise from the Southward and at the beginning of the sharper decline to the Northward, and as to the avenue towards Harlem, it doth not yet appear what it shall be, nor to what class of "improvement" it shall be given over. From the map, one might say that Upper Fifth avenue, or "Central Park East" in the sense of fashion, would terminate only with the Park itself, at One Hundred and Tenth. But then the topography is also to be considered, and the fact that "the Flats" at the northeast corner of the park are already occupied with dwellings which cannot be called fashionable. Where the line may finally be drawn we cannot be sure. But, for the purposes of present fashionable architecture we may safely draw it at Ninetieth street, and begin our downward course from there.

The Carnegie mansion itself which has so stimulated the development of the neighborhood and so "created values" falls first to be considered. The boardings are still up on all three fronts, but one can make out the mansion pretty well behind them. And one of the first emotions of the beholder ought to be of gratitude to the owner for allowing himself so much elbow room that he need not go into the street for a breath of fresh air, but even in Fifth avenue can establish himself under his own vine and fig tree. He has set an example to other billionaires which it is to be hoped some of them may follow. Thus, in time, may we have a fashionable quarter of New York with something of the charm of the fashionable quarters of smaller cities, where a rich man may show his riches in the unobjectionable way of refraining from building his house to the limit of his ground in all directions, may provide for it a setting, and secure for it the appearance as well as the fact of spaciousness. In fact, the detachment of the Carnegie house gives it a grateful look of suburbanity which has been much enhanced by the architectural treatment. Not by any means of the American suburb as we know it, attractive as that often is, but of the English "House" at the edge of its town. It might be a great house at Kensington, not the artistic and modern "South" of that name, but that of the eighteenth century, or of the Regency at latest. There is not much pretence of architecture about it. But its length and its "lowth," to revive a good obsolete word, would make it imposing in spite of itself. It must be close upon 175 feet in extreme length, omitting the stables that are apparently to come on Ninety-first, but including the picture gallery of perhaps forty at the east end by some 60 in breadth, and three moderate stories in height, not counting the roof story of which the metal dormers emerge over the heavy stone balustrade. Nothing could be simpler than the composition, a solid stone basement, and a superstructure of an excellent and sufficient-

ly varied rough red brick. It is worth noting that the house has been very considerably varied in execution from the published designs. But one story of the annex at the east end has been built or apparently is contemplated. Each of the long fronts still consists of a central feature, a doorway below, a triple window above, flanked on each side by three windows, and again by a wing of one bay and one opening, strongly demarked from the centre not only by a recession, but by a broad quoining of masonry. But the detail of the long fronts has been changed, including the general treatment of the central feature, and the composition of the end, the Fifth avenue front, which is of some sixty feet, and this much for the better, by leaving out the triple division altogether, equally spacing the five openings, and introducing, at the top of the basement, a notably vigorous and successful corbelled balcony. The detail of all this is also Georgian in effect, if not all in origin, all except the annex, the picture gallery, where a frieze of triglyphs and disks, and a bristling cresting give an air more Hellenic, or more Gallo-Hellenic, than quite comports with the rest. But the heavy quoining, the heavy window framing in stone, the heavy cornice, the huge urns, give the whole the air of "comfortable bourgeoisie" at which the architect seems to have aimed, and which is enhanced by the heavy granite urn-crowned posts that are the stanchions of the fence not yet in being that is to screen or guard the garden. The usual heaviness and the somewhat excessive scale promote the "robustious and periwig-pated" aspect which has apparently been quite meant, and which is characteristic of the eighteenth century, It is reported that the owner instructed his architects that he distinctly "did not want a palace." Well, he distinctly has not got it. But he has got a very comfortable-looking and gentlemanlike and rather handsome house, with the suggestion of a rus in urbe carried throughout. That is a considerable success, as town-houses go.

For how they do go! Walk down the next block front, from Ninetieth to Eighty-ninth, and see. Here are four twenty-five foot fronts still unfinished and therefore of the newest fashion, which all exhibit the swell front which has suddenly invaded all the fashionable quarters and which is so apt to get the unskilful or the unwary into trouble. Three of them, in brick and stone, carry the swell down to the ground, with an awkwardness almost inseparable from the scheme, which does not admit of sufficient breadth of flanking pier fitly to frame the front on a twenty-five foot lot, unless the swell is reduced to a mere bay window. These are in brick and gray stone, and offer nothing very salient to the commentator. The fourth is in white marble, and the swell is of two stories only, under a recessed attic, and resting upon a projecting rectangle at the base, an arrangement liable to extreme awkwardness except in very skil-

ful hands, more skilful, at any rate, than have here been concerned in it.

There is nothing now to detain us until we come to the block front between Eighty-sixth and Eighty-fifth, which is in large part occupied with a row of "classical" English basement brownstone fronts that look primeval, Venerable things! they have come down to us from a former generation, far antedating all their neighbors, and being, at a guess, of the vintage of 1870 or thereabouts. But after the sprightly polychromy we have been looking at, one cannot help wondering whether these dingy, dull old fronts, which are quite innocent of art, but equally of the pretence of it, do not constitute as eligible a type as any of those which are "struggling to be born." Refine the detail, one is tempted to say, pull off the sheet metal and replace it with stone, and why would not these unpretentious fronts be as good to live behind as all but the very best of the modern varieties of which none has as yet established itself as a type, nor seems likely so to do. Curiously and luckily, the architect of the corner house next to the row seems to have taken this view, and has produced a well-behaved front which, indeed, runs the risk of not being noticed, but which, when you do look at, is entirely inoffensive, "not a headache in a barrel of it," and that is more than you can say for any but here and there a very exceptional one of the novelties. The view has been taken, still more strikingly, by the architect of the reconstruction of the house at the corner of Eighty-fourth. Because this is a most typical brownstone front of the more expensive, a full sixty-foot front, apparently from the actual atelier of the late Griffith Thomas who bordered lower Fifth avenue and Madison square with so many of the same kind. Here a modest cornice and parapet in cut stone have taken the place of the undoubtedly bloated projection that preceded it, the "stoop" and the portico and the front door have been replaced by a bay window, and the entrance moved to the side. The addition of the protrusions, it is true, mars, if it do not destroy, whatever effect the original box owed to its proportions, and was doubtless made for the accommodation it gained inside, without sufficient care for the exterior effect. But the detail is much more scholarly than the old, and in much better scale, and the total effect here also, is entirely inoffensive.

And yet, to raise the question we raised just now is to settle it. What can be drearier than a walk through any typical and unchanged brownstone district. Suppose the sheet metal were all replaced by stone and the swollen detail reduced, still nobody would walk through the district for the pleasure he found in looking at the outsides of the houses. Our present promenade, on the other hand, is brimful of interest and amusement on just this account, and



NO. 1009 FIFTH AVENUE.
(The Duke Residence.)

New York City.

the frequent failures are scarcely less amusing than the rare successes. Continue we to the corner of Eighty-second, and contemplate the corner house. You cannot help looking at it and experiencing some sort of emotion, whereas on Murray Hill, in the untouched parts, you may undergo a complete architectural Nirvana. This house, to begin with, is agreeable in its color, a combination of red brick with a brown gray limestone, and in the main, the combination is fairly well managed, and the proportions of the two tints effective. The solid stone basement, and the solid stone attic, and the three variegated stories between,—that is all very good, and tends to produce a repose which the color-treatment, at least, of the central part does not destroy. There is something to be said, too, for the design of the central feature of the long front, the small segment of a large circle occupying the central three stories and, in the upper two of these, having its wall space emphasized by the single small opening at the centre of its face. But it is very inadequately supported by the narrow pier, faced with a column, which divides the entrance, to the detriment if not destruction of the dignity of the same. And, indeed, the whole basement is visibly inadequate as a base for the superstructure. It is all very well to express that the "premier" is the premier, and the ground floor inferior in importance as in place. But, all the same a millionaire should not enter his abode on all fours, and through a tunnel, as the Eskimo his snow hut. The rasing of the basement, say, by a distinct subbase and plinth, and the impartment of more importance to the principal entrance, seem, in the present instance, to be powerfully indicated. And the pediments that give importance to the premier, and the huddling of openings at the far end, together with the color, give an unpleasant air of busyness and fussiness to the front. But still it is "ower good for banning" up to the cornice line, at and beyond which it is not too good for anything. We hold this truth to be self-evident that, when a man goes into "six figures" for his dwelling house, he ought not to make its upperworks of sheet metal. That is a cheap pretence which nothing can distinguish from vulgarity. Happily it does not deceive anybody. In the present case, whether from stern conscientiousness or mere color-blindness, the very housepainter has exposed the false pretence so that the wayfaring man cannot err therein; for he has failed, by several shades, to match the tint of the stonework. And the design takes on that dropsicality proper to the sham material. Presumably the designer flattered himself, when he had completed the balustrade tin parapet, and the pedimented tin dormers peeping over it, and the metal work (which here, by the way, is honest metal work) of his crowning pavilions, that his work would look "Paris-



NOS. 1007 AND 1008 FIFTH AVENUE.
New York City.

ian." But he can no longer deceive himself; still less can he deceive anybody else.

The end of this house (1009 Fifth avenue) seems to have been composed in conjunction with Nos. 1008 and 1007, and to be meant to be considered in relation to them, as a composition of three house fronts. We have to retract, as to this, even such carefully qualified praise as we bestowed upon the long side. The end has the advantage of no entrance in the basement which it was therefore easily practicable to make adequate as a support. But it is evidently inadequate, architecturally. Moreover, there is no detail on the long side of such badness as some of this, especially the festoons under the third story windows, and the sheet metal parapet that crowns the four story bay. It is insensitive, slovenly and reckless. To be sure, it is not so bad as the middle front of the three, but very few things are. We know of nothing worse. And yet, in this central front, there is a glimmering of an idea. That is in the manner in which the two-story oriel is set upon the rectangular porch. It is really a good notion. The solidity of the wall in which the doorway is cut makes it a suitable substructure for even the greater area of the superincumbent bay, and the corbelling of the overlapping ends needed only to have been better more studied to become very good. But that is the trouble with all these things. Nothing is studied through or carried out, but the designer rushes from one-half done thing to half-do another. Above the basement, we defy anybody to find anything to praise. The oriel would evidently be better off without any of the decorative detail which has cost so much of the owner's money and of the time of a carver who must have had trouble to keep himself awake while he was doing it. How much better the thing would look if it were all planed down to the face of the wall. But this is not the worst. Look at the top. How positively distressing it is. Could anything be uglier, is anything in the "fancy tops" in sheet metal of the tenement houses of the Lower East Side uglier, than this feature? How deplorable is that niche, how distressing those gaunt flanking pilasters, how much to be regretted that arched canopy, that parapet, those ornate dormers! Could anything of the official architects of this municipality themselves show less of architectural scholarship, nay, more of architectural iliteracy? One comfort, to be sure there is. Above the cornice line it is all sheet metal. What a wicked waste it would have been to set a carver at work doing all this in actual stone, to say nothing of the effect upon his mind and his immortal soul! It would ever have been a distinct gain if the pendant festoons down the flanking piers could have been done in sheet metal also. It would have been so much easier and cheaper for the owner to have them pulled off, when he was educated up to not standing them

proceeds to cheapen, first by hurrying the architect so that he cannot do himself justice, and next by translating cut stone, say, into terms of sheet metal. It is very obvious that good domestic architecture cannot grow out of this state of things. It grows out of houses carefully and affectionately and at leisure designed to meet the needs of particular individuals, and not out of a pot shot at the requirements of "the average man." Inasmuch as there is no average man, and as the houses are bought by individuals, why should not the individual have a house built to suit him? The answer seems to be, because the speculative builder has prëempted the desirable sites, and will not sell one unless the buyer will take with it a house that does not suit him, and pay a builder's profit on the same. Paul Bourget says the American will spend anything but time. It looks so. For rather than take time to get himself a proper house the millionaire will buy a house which does not suit him, and thereupon hire an architect to tear up the interior and turn it into a house that does suit him as to the interior. The next step should be to hire an architect to tear off the exterior, and turn that also into something that does suit him. In that case, the purchaser of No. 1007 Fifth avenue should be rather favored. All that he really needs to do to turn the front into something that a gentleman need not be too much ashamed to live behind, is to throw away the cornice and parapet, replacing them with masonry, and then to plane all the ornament from the front. He will not have such a bad house.

Next to this group comes a single house, No. 1006, in white marble, which forces itself upon notice, if only by reason of its material in contrast with the soft, warm gray and rather hot red of the "group." This also is a swell front, and the swell is noteworthy for several things. One of them is the infelicity of its proportions. It is evidently either too important or not important enough. A two-story oriel in a five-story house is comprehensible enough, but it should then be a subordinate feature. When it constitutes, for its two stories, the whole front of the house, and there is one story of basement below it, and two of superstructure, it seems impossible to make such an arrangement rhythmical. The balcony under the fifth story is an unsuccessful attempt to dissemble the awkwardness of the disposition, which need have no awkwardness if another story had been included in the swell front, and that had been made frankly "the" front. The straight line of the balcony, over the curved platform of the projection, is in fact an additional awkwardness. But a more important infelicity is the manner in which the projection is supported, or left unsupported, upon a rectangular balcony, carried for two of the three bays into which the front is divided, or for one and a-half, upon corbels, and for the other

half upon two columns which bound the stoop, and which are apparently very weak for their function of support. (Compare them in the illustration with the comparatively exemplary treatment in this respect of the basement and entrance next door.) That is also a meaningless and ineffectual device for giving more apparent framing to the bay window, whereby the outside piers opposite this are laid up in little quoins, whereas the wall above and below is of ashlar of great size. Having said this, however, and having duly repeated our protest against the use in a palatial mansion, of sheet metal in imitation of masonry, and especially of the panelation of the frieze under the main cornice, it behooves us gratefully to acknowledge that the detail in masonry is much better studied in itself, and much more successfully adjusted in scale, than in the fronts we have been considering.

Continuing down, we find at the end of the next block, three houses designed in absolute, and we should be inclined to say, if there were any reason to suppose that any one of the designers had had notice what either of the others were doing, in ostentatious independence of each other. Why should such things be? In cities in which the municipality charges itself with appearances, other than political, these three designs, which must have been submitted at about the same time, would have been returned by the aedile to their owners, with instructions to "get together," and submit things which did not swear at each other. Why should not educated architects do of their own accord what they would, and should, be forced to do in such cities? It is a frequent question, and very seldom gets in New York a satisfactory answer. And here it is evident that the designer of the first of the row, No. 992, would violently have resented any attempt to make him conform to anything in his surrounding. It has been his purpose to assert himself by the widest difference from any thing that was, or that might be, in his neighborhood. It is inconceivable that any other architect should be inspired with the bright idea of using a combination of white marble and brick of the brightest lemon chrome for a house front. When he had hit upon this, he was already sure of getting his work noticed. That he was sure of getting it equally resented does not seem to have troubled him. To insist upon being taken notice of, quand même, is now recognized as the main motive of criminals like Guiteau and Czolgosz. It is, of course, more desirable that this craving should be appeased by making defiant and notorious house fronts than by assassinating presidents. But the less mischievous expression may still be highly offensive, where, as here, it spoils a whole block front, and nullifies the efforts for peace of the adjoining designers. Perhaps, with his paralyzing combination of material, it would not much matter what the present anarchist did with it. But in fact, in the upper stories, where the

combination appears, he has aggravated it. There is an exasperating puerility about the two superposed pediments at the centre of the front and about the festoons, and about the detail in general. And yet he, too, has notions. The white marble basement is really good. The stout coupled columns at the entrance look adequate to the work of support they have to do, and the feature is in itself effective and pretty. But the superstructure is quite insalvable, even by paint. "A decent respect to the opinions of mankind" will compel whoever buys the house to pull off the front even before he tears the inside to pieces.

The next house, No. 991, deserves much more respectful consideration. The material is warm gray limestone and "Harvard brick." As may be seen in the narrow strip of the front that is visible at the left of the photograph of the next house, that at the corner of Eightieth street, it is a swell front for three stories, while above that there is a single story under the cornice, which is here of actual and refreshing stonework, and an attic above with dormers frankly of copper. Though the material is frankly shown, the design of these is lithic, and one wishes that the architect might have attempted to exhibit a construction more suitable to his material. Neither can one quite acquiesce in the keystones of the apparent lintels, of the third story, nor in the "festoons to taste" of the same Though they are both designed and cut with spirit, and especially with "chic," it seems that the skill and labor might have been more appropriately applied elsewhere, where they might have had the meaning they here lack. All which does not prevent this from being an interesting and scholarly front, much the best of the twenty-five-foot fronts we have thus far been considering. The material and the treatment of these two stories, including particularly the second with the three arches, give it a pleasant flavor of "Old New York," while it is yet quite unmistakably of its own time, which is to-day. The basement is excellent, with reservations again respecting the cartouche and the palm over the entrance. But the device is very effective by which the lintel of the porch interrupts the curve of the swell and gives the superstructure visible means of support. The house is not pretentious and it is not "thingy." It has no more "features" than can be put into one countenance without crowding it, and they are adjusted to it, in place as in scale. Upon the whole, it is exemplary.

In point of quietness, the next house, the house at the corner of Eightieth, with its longer front on that street, is also exemplary. It is true that the designer of a corner house has the advantage, as we have just seen in another instance, that he need not disturb his basement with the entrance, which is the principal trouble of the designer of narrow fronts, but can keep it unbroken as a support



FIFTH AVENUE AND 80TH STREET.
(Residence of F. W. Woolworth.)
New York City.

and basis. But this designer has made the most of that advantage, and his shallow three-sided bay looks broad and reposeful. The detail is, perhaps, a little underdone in scale, and thus lacks emphasis and tends to flatness, especially in comparison with its neighbor, in which the scale is perhaps a little excessive. But this detail is so good in itself, and so thoroughly studied as to make the recklessness of much we have been looking at all the more evident. On the long front, too, the wall is of a grateful restfulness and solidity, while the design and distribution of the dormers and chimneys animate the sky line and prevent the quietness from becoming monotonous.

On the block below, No. 987, insists upon our attention. This may very well have come from the drawing board of the same overworked speculator's architect whose works we have examined, and whose avidity of mordication so evidently exceeds his capacity for mastication. Upon the whole it is better than any of them, excepting, perhaps, No. 1007, which it violently resembles. This detail is better than that, though far enough from exquisite, and denotes less urgency on the part of the employer, though even here "closure" seems to have been voted at an early stage. On the other hand, this lacks the comparative repose which that derived from its strong horizontal lines. They are entirely superseded here by the projection of the window framings which result virtually, in vertical channels running through three stories, and what good they do him is more than we can tell. This is a good notion of an entrance for a swell front, marquise and all, though on the other hand, this front breaks out in a perfect revel of tinware at the top. Compared with this dishevelled profusion, how comparatively respectable the almost blank front adjoining, tin top and all; not that is any great thing either, though it looks better in fact than in the photograph.

But here we are at Seventy-ninth, and out of the terra incognita into known regions. We have seen many things, and more bad than good. But haven't we had a good time? Isn't it an amusing walk? Hasn't there been, every few steps, something to look at and to talk about? And is not this, so far, a good thing? Moreover, compared with the riot a speculative building which broke out after the abandonment of the brownstone front, all this work, even the worst, has an educated look. All this is an incontestable benefit. On the other hand, the moral is impressed upon us that the best way for a man or millionaire to get a house is to get a good architect to build it for him at leisure, and not to put up with the "ready to live in" article from the speculative builder's bargain counter. There can be nothing of "the still air of delightful studies" about this latter edifice. We have confined ourselves strictly to the upper half-mile



NO. 987 FIFTH AVENUE.
(W. B. Leed's Residence.)

New York City.

of fashionable Fifth avenue, and resisted constant solicitations to turn down the side streets, and see the same morals written equally plain. If we had followed these beckonings, the Architectural Record would not contain the things that should be written. Neither, with regard to many of the things, would the editor thereof print the language in which the emotions they excite would most readily clothe themselves.

Franz K. Winkler.



ARCHITECTURAL ABERRATIONS.—No. 17.

The New York Family Hotel.



S it proper to speak of a whole class of buildings as aberrations, simply because they fly in the face of art and reason? Does not a freak, of art as of nature, cease to be a freak when it propagates its species and increases and multiplies and replenishes the earth? These are questions which force themselves upon the reflective observer of some very monstrous and repulsive erections which are now disfiguring and beginning to disfigure Madison avenue in the neighborhood of Fifty-ninth street. They are all apartment houses, or perhaps more properly, "family hotels"; and they are conspicuous by their sizes and sites, each of them occupying some four city lots, or an area of 100 feet square, and rising not less than eight and sometimes to ten stories.

We give a cut, from the so-called design, of one of these structures, of which some three stories in masonry veneer and some five or six in steel frame, may actually be seen "in situ," at the southeast corner of Madison and Sixty-third. We admit that this is an invidious operation, because we are not prepared to hold this particular effort up to any more public odium than several of its neighbors, than that at the southeast corner of Madison and Sixty-sixth, for instance, or than that at the corresponding corner of Madison and Sixty-first. The aberrancy which they all three have in common is that they are crude, unstudied, "thingy," and uneasy. The prototype of the edifice which we are enabled to illustrate seems to be "Sherry's," at Fifth avenue and Forty-fourth, done by architects of name and note. They had, in fact, an insoluble problem, and are entitled, artistically, to commiseration upon it. An architect of experience once observed that it was difficult enough to design a monument, but when it came to be complicated with an observatory and a boarding house, the difficulty rose to impossibility. So here. How can a fashionable restaurant interconvertible with an apartment house or a department store, attain an architectural success? It is a kind of contradiction in terms. It is related that a stranger in the city, standing at the corner of Fifth and Forty-fourth, inquired of his cicerone what the building at the northeast corner might be, and, being told that it was Delmonico's, made answer. "Oh, yes; it looks like Delmonico's. And what is that?" wheeling to the southwest corner. "Oh, that is Sherry's." "Oh!

What's Sherry's?" For which it would be quite unjust to blame the architect whose instructions bound him to make a building which should not be, nor yet look like anything in particular, and in which even the primary division of low and lofty rooms which



AN APARTMENT HOUSE—A TYPE.

Southeast Corner Madison Avenue and 63d Street.

the immediate purpose required had to be foregone in the treatment of the exterior, and with it all the promise and potency of expression that the arrangement contained, in view of the possibility that it might be destined to different uses. Perhaps the evasion

of the insoluble problem presented to the designers was as eligible as any, seeing that they could not look, in the requirements of their building, for the data of its architectural expression. At any rate what they did was to emphasize and signalize, as strongly as possible, the separateness of the stories which were not all separated in the "first intention," and to produce that incrustation and projection which are the characteristics of the building. And these characteristics reappear, in even exaggerated forms, in the family hotels just now in question. Logically, of course, these bold projections "have nothing to do with the case" in a steel-framed building of which the masonry is but at once a protective wrapping and a decorative veneer. A bold stone cornice, in a real wall of masonry, is supported by the wall it overlaps. When there is no real wall to overlap, its form should be modified and its projection diminished accordingly, instead of being retained and increased and left to be supported by unseen and inscrutable expedients. Now, the present building, the one we illustrate, is simply a box, "built to the limit" in all dimensions. All that it has of architecture are the exaggerated projections of cornices, the portico at the base, and the amazing top. Neither the portico nor the top is yet in being. It is only in the ferocious projections that the architecture on view consists. This, the profiling of the mouldings, the shapes and detailing of the corbels, and so forth, is not only irrelevant, but it is painfully ugly. It would not be impressive or appropriate in a building of real masonry with walls as many feet thick as these are inches. If not beautiful, it purports at least to be "chic," the genuine Parisian article at not more than two removes. But the impression given by the accumulation of it, by the rows of banded columns in the drawing, by the rows of corbels and pediments huddled together in the fact, is simply of a prodigious "thinginess," destructive of repose and quietness. And when that terrible top comes to be superposed, unless that crowning calamity is averted, the thing will stand a monument of ugliness and vulgarity and insincerity. Insincerity. That is really the point. It is incredible that anybody concerned could have done any of these things because he really believed in them himself and liked them. They were done because they were supposed to be the correct thing for the autumn of 1901, according to the lights of the promoters. For the author of the scheme is evidently not an architect, good or bad, but a "promoter," whose agent and instrument the architect is. Hence, perhaps, most largely, is the dead and apathetic look of the whole work. Nobody concerned gives evidence of any pleasure in his work or of any desire in respect to it, excepting to get through it in the shortest time and with the least trouble. It is a comfort to recognize that it must have

bored the man who did it almost as keenly as it bores the spectator of his efforts.

And, yet, bad and dead and hopeless as this is, it is no worse than several of its neighbors. This seems to be intended for a monochrome of white stone, and in that respect it has an advantage over the edifice at the corner of Sixty-sixth. This has a two-storied marble basement, with a porch which is quite a miracle of ugliness, two pairs of distressingly lanky columns, carrying a baroque broken pediment, and hung, as to their capitals, with foolish festoons. The absolute want in this of any sense of proportion, the wanton defiance of even the traditional and conventional sense of proportion give a sense of pain which is also a sense of insult. Above is a single striped story in glaring red brick and glaring white marble, and above that four stories mainly of brick, with marble trimmings" (a word as appropriate here as it would be affronting if applied to the work of an architectural artist in this kind), and, finally, an attic again in marble. All this strewn about, fitfully and casually, with balconies and pediments, triangular and curved, closed and open,—in short, with "things." The one thing the detail has in common is that it is all bloated, aggressive, too big for the building, and that the thinginess is destructive of repose.

That is also not an edifying edification at the corner of Sixty-first. One of the few interesting points about the design of the first illustrated building is the fact that the shapes of all the openings are allowed to come frankly square. This looks like a fair and frank treatment. But, in the building at Sixty-first, the openings are all elongated, much beyond what is customary even in buildings not subjected to the limitations of the steel frame, elongated, in fact, until they become mere slits. This is a monochrome of light limestone, but the two lower stories are again united in treatment, are very heavily incrusted, and are fronted with a feature which closely contests the palm of ridiculousness with the marble portico just described. It offers the distressing arrangement of three banded and incrusted columns, and, in the mezzanine above of five caryatic figures. The work of the journeyman sculptor in these betrays the same hopeless weariness and apathy which we have noted in the others, as if the sculptor, as well as the architect, had been thoroughly tired out before he began. But above this the designer has had the luck or discretion to refrain from incrustations so that, for the central part of the shaft of six stories, there are no projections beyond the plane of the wall. The effect is so far good. There is something for the eye to rest on, some expanse and sense of repose which we have quite missed from the others. In revenge, however, the author has reverted to incrustation in his two-story attic, which is not by any means a happy or competent perform-

ance, and has done his best to lose the comparatively good effect he had derived from the moderation and eventlessness of his shaft.

But, indeed, it is absurd to take any of these designs more seriously than they take themselves, or to impute to them any other than a strictly commercial purpose. The proof is that a stupid old building, the Madison Avenue Hotel, at the corner of Fifty-eighth, which is simply a dull and empty work of the builder's "architecture" of the brownstone period, actually takes on dignity and respectability by contrast with the more flaunting and really more vulgar works of recent builders' architecture we have been considering.

It would not be fair to pass without saying that in this region there is at least one family hotel which it would be damning with far too faint praise to say that it is well and easily out of this particular competition. This is the hotel at the northwest corner of Fifty-sixth and Madison, built of grey stone and Harvard brick, and showing a considered design. There is some dignity and force in the solid stone basement, some expanse and some repose. The implication of the two materials above is well managed, and the skyline is effectively and picturesquely broken by the double dormers united under a single curved pediment. We do not mean to overpraise this work, but we are bound to say that, in marked contrast to the things we have been talking about, it is really a work of architecture. But what saddens us, in view of all the talk about the advance of artistic culture and appreciation, is the glaring fact that people who have much money to spend in the rearing of fashionable apartment houses do not find it worth their while, as we have seen in three conspicuous instances that they have not found it worth their while, to employ an architect rather than an "artchitect" to design those habitations and to make them fairly presentable to people who know the difference between the fine art of architecture and the very coarse art of "artchitecture," as that is practised by contractors' "artchitects" in the city of New York.



OVER THE DRAUGHTING BOARD.

Opinions Official and Unofficial.

I.

The Design of Our Tall Office Buildings—The Latest Phase.

The newest business buildings of New York invite study, because many of them are so very unaffected, in an architectural way. No pretence about conforming to artistical tradition or fidelity to style:—those beginners in art-study who always begin by asking what style the building is in will be baffled by these huge constructional piles. He must be even less than a beginner—he can't have begun,—who would think of associating Greco-Roman or Romanesque, in any form, with these new towers of commerce. No sculpture; no columns except a pair at the entrance; no broad string courses made into entablatures by the familiar grouping of mouldings; no forced submission of the exterior design to a recognized ordonnance or an ideal proportioning of its parts; the new office building is a severe, four-square, flat-roofed, many-windowed thing, presenting to the gazer from without as little splendor—as little sumptuosity—as may go with fine material and good building, and that in spite of the millions spent upon them. And the visible cause of all this is remarkable. Buildings begin to be built (not by the owner, any more, but) by some company organized especially to "finance" such big undertakings. Such a company takes the plot of ground into its charge, employs an engineer and an architect, and goes on to build. It has no enthusiasm, no sympathy, and no bowels; it cannot be bullied or persuaded by the architect because it has no ears to hear him with, nor eyes to which artistical sketches can appeal; it objects at once to anything in the floor-plans but economical distribution, and quarrels with every festoon offered for exterior ornamentation. Only that which the would-be hirer of an office is found to demand—only that is allowed; and that is not a part of the exterior design. (See illustrations herewith.)

II.

"The aids to noble life are all within,"

and so are the essentials of office life. The modern lawyer does not ignore his office floor and walls, the look of dusty litter, of hud-

dled bookcases and paper-littered tables, as his predecessors did. If the contemporary historian will read about Sergeant Buzfuz, in the proper place, "and when found make a note of" it; and if he will then go visit his legal adviser in some tall building of Broad street or William street or lower Broadway, he will have had an object lesson. The smooth and hard flooring, mosaic or Terrazzo Veneziano, laid on cement; and that on a solid floor of masonry and iron; the dado of polished marble: the perfectly fitting sash, and the doors which do not "bind" nor "stick:" the locks and latches which go safe "home" and go on doing their work and giving nobody any trouble: the permanence of everything; and the assurance it gives of permanence, resulting from the quasi-fireproof construction: the exclusion of dust and smells and noises, resulting from the abandonment in this modern way of building of hollow floors and hollow partitions and big pockets behind wooden furring: all this, with a steady supply of warmed air, to which is added a bright fire for its beauty and its look of cosey comfort, except only in cases where considerations of fire insurance (for these buildings are not wholly fireproof) forbid that luxury: these are the "notes" of the modern lawyer's office. And the modern office building offers all these things, with swift elevators and well-paved and well-lighted halls and passages to match. No saving of first cost will be allowed to mar the attractiveness or diminish the renting facility of these offices. Beauty and artistic treatment will be disregarded; but when money will draw money it shall be freely spent.

The Building Within—Its Equipment.

III.

It is a coincidence, in a way, that the two old buildings which were the most carefully wrought exemplars of old hopes—old ambitions—old gospels of art, have been swept away in these latest years to make room for two such buildings as are described above. The American Exchange Bank is already housed anew on the very plot of ground which once held the thoughtful study of Eidlitz in his earlier days—1857 and 1858. The Academy of Design Building, which Wight built in 1865, is gone; but in this case its successor is to be seen only by the mind's eye—there is [October, 1901,] a dust-filled hollow where those marble walls arose. Eidlitz had built the Continental Bank in Nassau street, not as it was before demolition, but with four stories of windows only; and of this he had

Old and New Methods—Reminiscences and Coincidences.



THE BATTERY BUILDING.

State Street, New York City. Clinton & Russell, Architects.

To Illustrate "The Design of Our Tall Office Buildings."



THE BROAD-EXCHANGE BUILDING.

S. E. Cor. Broad St. and Exchange Pl., New York City.

Clinton & Russell, Architects.

To Illustrate "The Design of Our Tall Office Buildings."



ATLANTIC MUTUAL BUILDING.

Cor. Wall and William Streets, New York City. Clinton & Russell, Architects.

To Illustrate "The Design of Our Tall Office Buildings."

made a curious and instructive work. It was massive, in the true sense, with heavy walls and with floors of iron and brick, and fireproof beyond what is now called by that name: and its front was a combination of familiar elements of German Romanesque and German Gothic detail, treated with great originality. The American Exchange Bank followed; and here the German round-arched work alone was followed, and a design of severe simplicity, with deeply set windows, the moulded jambs and intrados of each far more effective in light and shade and more telling in the general effect of the exterior than had been seen before. The cornice was a marvellous thing, too, and anyone who has a good photograph of it should study it, now and then, to see what a very heavy and high corbel-course may be in the right hands. The interior of the bank was walled with cut stone like the exterior; and its flat ceiling was of slabs of the same stone deeply cut with German Gothic tracery, for Eidlitz held the theory that a business building should have no leaf-sculpture, no efflorescence of natural form; while mere combinations of mouldings might, of course, be allowed.

The Bank building above cited was important in its time, or would have been important had the architects been willing to turn their attention to rational ways of design. And the Academy of Design building also was important in that way; but of value, too, as a historical monument. It was the one American structure which embodied the principles of the British would-be restorers of mediaeval principles of design. Never, even in Great Britain itself, were those principles more fearlessly or more resolutely carried out.

We know, now, that the Gothic Revival was a vain thing, and that the much changed conditions forbade any such hope of a revival of the past. The world is drifting blindly through an evolution which we cannot control, whose course we cannot foresee, whose state of development a century hence might, perhaps, horrify us all could we get a peep at it. The work of the different reformers of many different schools has gone whither the work of the political prophets has gone—into the limbo whence return only disappointments and broken promises. Still the history of the Republicanism of 1840, and thereafter, and the history of the German—the French—the British Gothic revivals, are all interesting; and Wight's sincere and partly successful efforts to design architectural sculpture afresh, by means of independent studies made from natural plants by his carvers themselves under his close personal superintendence was as gallant a piece of work as every artistic reformer was privileged to carry through. Unsuccessful as it may have been in many ways there was at least a chance of using its example and developing more perfect works of art out of it; but that was not to be.

The new business building has a vastly different genesis, as we have seen. No artistic ambitions are embodied in that monument of the modern builder's art; it is as commercial as an advertisement, or, let us say, as an express-wagon or a push-cart. Let us see whether, like them, it may not be capable of artistical results. For the well-built express-wagon is often a very comely object, indeed, having even some detail of purely decorative purpose and of not bad design.

It has been noted how hopeless are our conditions as long as even the good men take their ornament ready-made from their photographs of old sculptures. It has been preached, as a saving doctrine, that carved ornament ought to be forbidden to the architects, say for twenty years—forbidden till they cry aloud for permission even to design their own ornament if they may have some. It is thought to be like Mark Twain's "appetite cure;" recover your appetite by going without food till you are ready to tackle almost any kind of substance that can be eaten; and, even then, take no more meals a day than you have an appetite for; only two—only one—if that is your stint. Perhaps the bare and yet imposing exteriors of the new business buildings, 1898 to 1901—perhaps that total abstinence from indulgence in ornament, may yet save the situation. Suppose that, after twenty years of a still more general abandonment of all builders together to the no-ornament regimen, the world should wake up to the fact that, here and there, some bold experimenters had really tried to ornament their buildings according to the requirements of the case; working in some sculpture that really was not to be found in the books! Such a thing might be.

The Passing of the 25 x 100 Lot in New York City.

It is interesting and encouraging to note that the 25x100 lot, which, since 1807, has had such an unfortunate influence upon wholesome, comfortable and comely building in New York, is gradually being almost entirely superseded. Within five years probably the only houses ordinarily erected on an area of that size will be a residence of modern design, built in the upper Fifth avenue region, upon the former site of some high-stoop, brownstone relic. Yet in the beginning almost every class of building in the city—residences, tenements, lofts and offices—were tightly placed upon the 25x100 lot—a lot, which is for purposes of good building, at least fifteen feet too narrow and twenty-five feet too deep. Changes were first introduced in the dimensions of lots used for residences. As land became more expensive, it became customary to put five houses on four lots or four upon three lots, or three upon two lots. In not a few instances the process of reduction was car-

ried still further, and on a number of streets in the middle East Side brownstone houses four stories high and less than fifteen feet wide can be found. But it was only in the matter of residences that the modification of the 25x100 lot proceeded in the wrong direction. Naturally, buildings devoted to business of all kinds soon came to be erected on parcels with a wider frontage than twenty-five feet; and the desirability of using these larger plots increased just in proportion as the height of the structure tended to increase, until now when office buildings from fifteen to twenty stories high are the rule, strenuous efforts are made, too often without success, to obtain an area of at least 100x100, whereon to place them. But the 25x100 lot, thus more and more discarded for business purposes, was universally used for tenements and flats without elevators, and unfortunately fully five New Yorkers out of six live in such buildings. But unless all signs fail it will soon be superseded in these classes of buildings also. So far as non-fireproof flats are concerned, a great change was introduced, when it became possible to obtain electric power from the streets wherewith to run an elevator. This possibility led to an immediate and large addition to the number of elevator apartments, and to a diminution of their rentals, while at the same time it made it more profitable for builders to erect them on plots much larger than 25x100. The consequence is that for the last few years this class of seven-story non-fireproof flat has been erected on an area never less than 50x100 and generally on an area 100x100. Finally, the new tenement house law promises to complete the good work, for not only will it necessitate the building of tenements proper on a frontage of not less than forty feet, but it will also put a similar necessity upon the builders of flats which are a little better than the ordinary tenement, but which are too cheap for an elevator service. Except in the case of the buildings affected by the new tenement house law these changes have all been made under the influence of economic conditions, and there is but little danger that even in those sections of the city yet to be improved that there will be much if any reversion to the 25x100 lot. The beneficial character of the change in providing comparatively light and airy rooms in which to live and work is obvious, while the advantage which the architect obtains in the architectural opportunities offered by the larger area is equally plain. The 25x100 lot has been one of the most baleful conditions of metropolitan architecture; and no one will regret its supersession—except, perhaps the small real estate speculator.

One result of better architectural opportunities should be and will be the employment for several important classes of buildings of better architects. The stereotyped building erected on a ster-

An Opportunity for The Trained Architect.

eotyped lot, called, of course, for only a stereotyped set of plans, and the architects, so-named, who drew these plans, could turn them out by the wholesale. One designer of tenements, in the two weeks previous to the taking effect of the new tenement-house law filed plans for about a hundred dumb-bell tenements, erected on lots of the ordinary size. It was merely a matter of duplicating blueprints. And this was true, not merely of tenements, but of the cheaper grade of flats. When, however, tenements and flats begin to be erected upon plots of larger dimensions, much greater ingenuity in planning is required and a correspondingly higher order of ability in the designer. Moreover, the cost of these larger buildings is so much greater absolutely that their builders can better afford the fees of a good architect. It would doubtless be too much to expect that the speculative builder of tenements will immediately begin to employ architects to whom he would have to pay full fees, in spite of the fact that several such architects such as Ernest Flagg, and Howells & Stokes have successfully designed model tenements for the City and Suburban Homes Company; but it is not too much to expect that the builder of middle-class apartment houses will gradually employ an increasingly better class of designers. Several new seven-story apartment houses recently erected on the West Side, in particular those owned by the Astor estate, have been marked by a quiet and unobtrusive dignity in marked contrast to the crude and violent handling of the "French style," shown by some of the neighboring buildings. These neighboring buildings, it must be admitted, tell against the contention of this paragraph; but it is not claimed that a nice sense of architectural propriety will forthwith descend upon the speculative builder of apartment houses and their designers. The encouraging fact merely is that the way has been opened for the gradual improvement in appearance of a class of buildings which have hitherto been unutterably monotonous and dreary and that some few builders have already ventured upon this straight and narrow way.

In connection with the review in the body of this number of the Architectural Record, of the designs submitted in competition for the Memorial Bridge at Washington, it is satisfactory to remark

Artistic Bridges.

that there is much stirring of heart going on among the engineers themselves on this subject. This is especially satisfactory, since it is evidently only from the interest of the engineers as the scientific designers that there can come any real improvement in artistic design. The interest of the engineers, especially of the English-speaking

engineers, is attested by the appearance of a special publication, by the (British) "Institution of Civil Engineers," consisting of a paper by Mr. Joseph Husband, Associate Member, on "The Aesthetic Treatment of Bridge Structures," with an abstract of the discussion on it before the institution. In this discussion some eminent French, German, Belgian and American engineers took part by correspondence, and the result is worthy of a wider, at least of a more general, publicity than it can attain in the pages of an avowedly technical publication. The oral discussion was also taken part in, by special invitation, by many members of the Royal Institute of British Architects, including its President. One of the things that was developed, as perhaps might have been expected, was a bewildering variety of views among those who took part in it. Mr. Husband had divided bridges, for his purpose, into those of masonry, those of metal, and those of a combination of the two materials. By taking admired examples of each class, or examples which he thought worthy of admiration, he had endeavored to arrive, not at æsthetic principles so much as at partial working hypotheses in regard to structures of each kind. Such and such forms have been found in practice to be pleasing, such and such others to be unpleasing. Imitate those and avoid these, says Mr. Husband.

Evidently this does not carry us very far. In masonry it is well enough, because the forms of masonry have been settled by an experience of millenniums and no new structural methods or principles have been devised in modern times. Indeed, the design of masonry bridges is, according to the classification which has come in within a generation or two, a matter of architecture rather than of engineering, and offers no other or greater difficulties than any other matter of architectural design. But engineering has devised for metal new modes of treatment, resulting in forms never seen in the world before; repulsive, many of them, by reason of their novelty, and possibly repulsive because sufficient, or at least successful pains have not been taken to make the construction intelligible. At any rate, nobody ventures artistically to admire such results of modern scientific construction as the cantilevers of Poughkeepsie and Niagara, and the nondescript Sukkur bridge in India. Nobody can imagine any modifications of detail that would convert them into beautiful or even presentable objects. To the layman, they are "dreams of a sick man."

There are other engineering forms about which the opinion of British engineers differs from that of the rest of mankind. One reads with surprise that the Britannia tubular bridge of Stephenson is regarded with artistic pride as a work of art by most of the symposiasts, architectural as well as engineering, and suspects that

scientific admiration has usurped the places of artistic appreciation, and that there is even some Chauvinism concerned. One of the points which the symposiasts agreed in admiring in that structure is the prolongation above the tubes of the piers which carry it, and in this the architects seemed to concur. Sir Benjamin Baker, as the author of the Forth bridge, which has not won favor among architects, had his fun with this suggestion by showing, historically, that the prolongation of the piers above the roadway was made because it was expected to use them as towers for suspension chains. That is to say the "stiffening truss" which is an auxiliary in modern suspension bridges, was the chief thing in this design, and the towers and chains the auxiliary. When it was found that the tubes were strong enough to stand alone, the chains were omitted. Stephenson, intending engineering, as they say in billiards, "scratched" architecture. As Sir Benjamin put it: "He had heard a great deal of abuse of castellation, and of mediæval contrivances for pouring down molten lead upon the heads of enemies; but here he found architects and engineers holding up as a model a bridge designed for suspension chains which had never been erected!" Naturally, the little historical showing was a complete reductio ad absurdum of the admiration lavished upon the bridge by the previous speakers, whether upon the ground that it was pure engineering, or upon the ground that it was architectural, and both grounds had been taken.

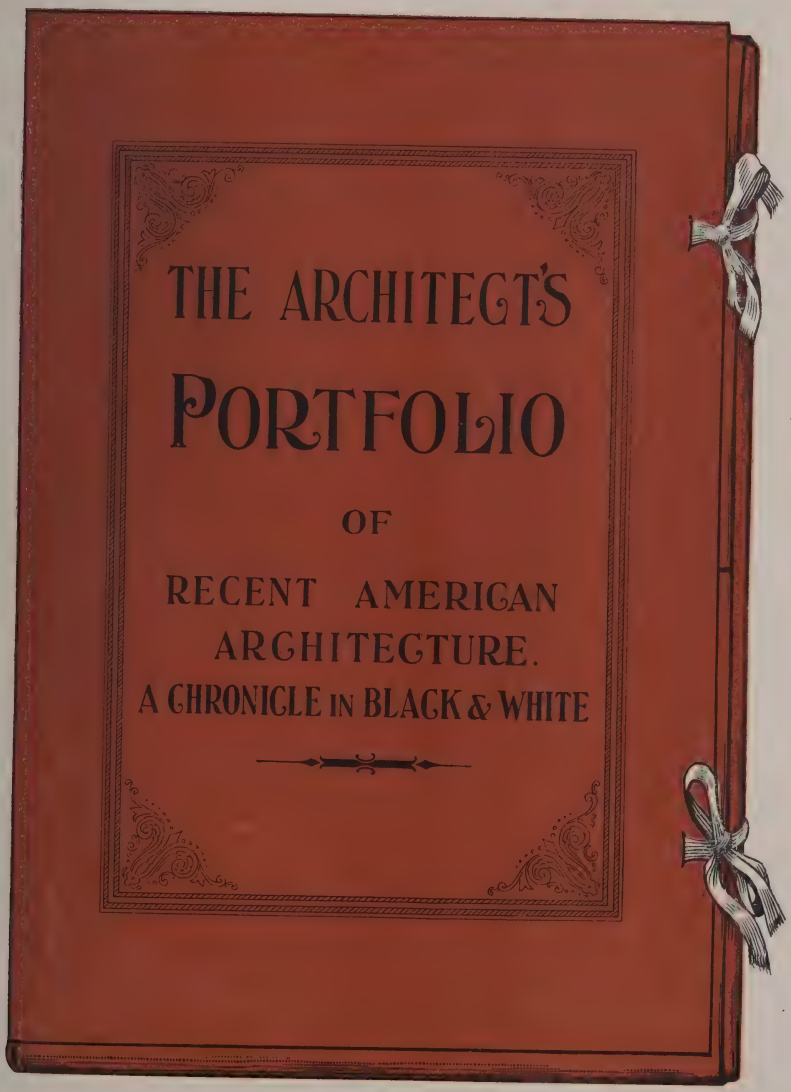
There were a good many useful and suggestive things said in the course of the discussion, useful for reproof or for edification, which deserve to be pondered by architects as well as by engineers. For the fact is that any real inquiry into engineering æsthetics tends to bring current and conventional architecture as much into contempt as current and unæsthetic engineering. Perhaps the most intelligent summation of the whole matter the report discussion contains was that contributed by Professor Pite, an architect, "but not a bigoted one." Some extracts from his remarks ought to prove interesting:

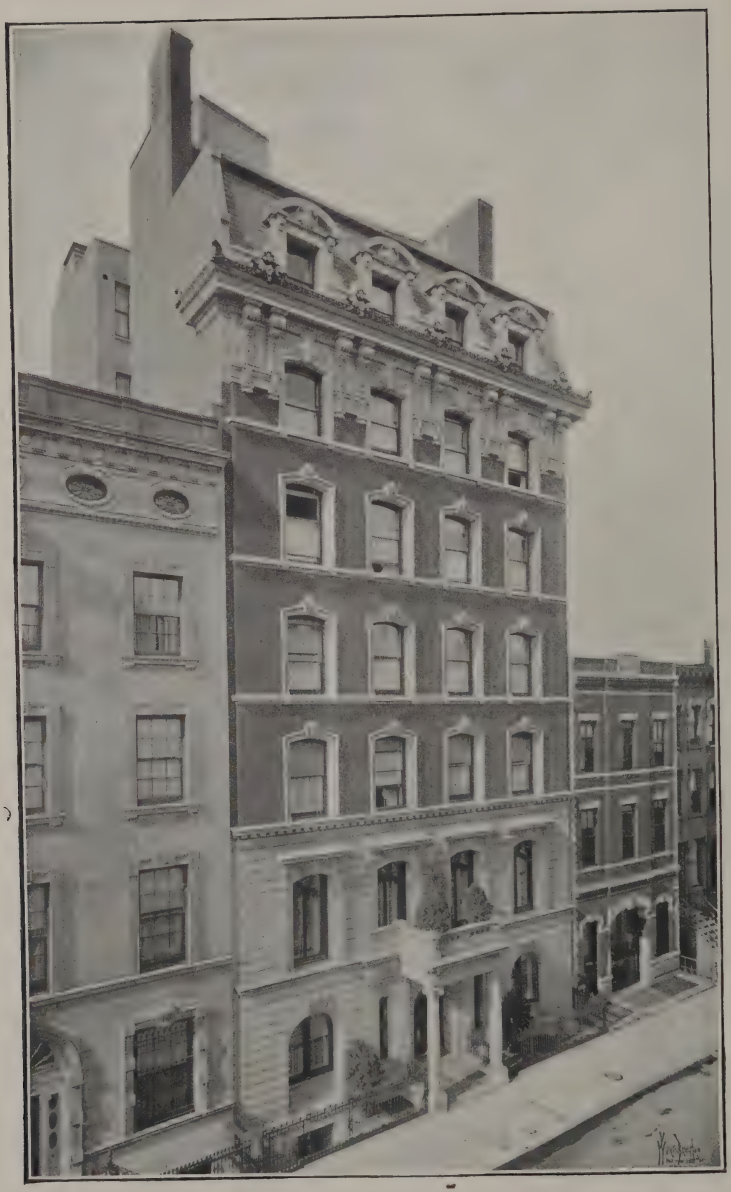
Engineering Aesthetics.

He might urge upon engineers that to a lay mind there was beauty in a beautiful machine, as such, and he did not know why a different meaning should be attached to the word beauty, apart from the beauty of workmanship, of fitness, of power, and of directness of expression, beauties which were recognized now in the most unaffected locomotive, and which were beginning to be recognized in the most hideous ironclad, which expressed its fierceness, its strength and its purpose, in the very want of æsthetic quality in its

lines. * * * He would like earnestly and heartily, as a practical designer, to press home the fact that artistic simplicity would be achieved by dissociating from the mind all architectural phraseology, all architectural ornament, all architectural traditions, and by aiming, in metal bridge building, at exactly the same beauty of workmanship, beauty of economy of material, beauty of accomplishment, that pleased the mind in any form of mechanical effort. In that way engineers would keep clear of the changing whims of artistic fashion; keep clear, in metal, of the traditions of an architectural art of stone, of the conditions of an architectural art in wood; and would work out in iron, with its different qualities and stresses, an æsthetic style based on the absolute scientific necessities of engineering practice, which would without doubt give infinite satisfaction to generations to come.

Doubtless, that is the way to do it. Moreover, it is the way in which it has been done, in those works which to their builders were essays in engineering, but which to posterity have become models of architecture. The interior of Westminster Abbey is the example taken by Professor Pite, and he calls it very properly, " a sanctified form of engineering." But, quite apart from the specific merits of this or of any other contributions to the discussion, the most gratifying thing about the discussion is, we repeat, the fact that it was held, the fact that engineers themselves recognize that their mechanical triumphs are so apt to be artistic failures, and that an engineer must look for appreciation exclusively to the members of his own profession, since what his work conveys to laymen is, in so many cases, only that it is ugly in proportion to its conspicuousness.


THE ARCHITECT'S
PORTFOLIO
OF
RECENT AMERICAN
ARCHITECTURE.
A CHRONICLE IN BLACK & WHITE



SPENCE SCHOOL.

West Fifty-fourth Street. James B. Baker, Architect.

A recent addition to the already enormous list of buildings in New York City which exhibit the influence of the French mode. In this case, contrary to the usual, the peace is kept with sobriety. The composition is orderly and obvious, on which account one is inclined to wish that the stone basement, now of two stories, could have been restricted in some manner. As the design stands the central brick section is hardly bold enough, and thus in some measure the division of the front into three parts is obscured. The grouping of the windows by the simple device of an emphatic wall space at the two extreme sides is one too frequently overlooked.



RESIDENCE OF GIFFORD PINCHOT, ESQ.

Rhode Island Avenue, Washington, D. C. Heins & La Farge, Architects.

This design comes perilously close to a wasted opportunity. The ample dimensions of a free-standing building such as we have in this case constitutes a "chance" more frequently sighed for in the profession than obtained. That the opportunity here was thrown away—be it innoxiously—will be the general verdict. There is unfortunately enough of design in the work to challenge attention, and yet too little of it to satisfy even the most moderate expectations. Every feature, save perhaps the upper story and cornice, misses completion. A more decisive division of the basement floor from the central two stories would have added emphasis to what there is in the existing scheme.



OFFICE BUILDING.

105-107 Fifth Avenue, Southeast Corner 18th Street, New York.

Robert Maynicke, Architect.



STABLE AND ARTIST STUDIO.

121-123 East 63d Street, New York. Trowbridge & Livingston, Architects.



THE TRUST COMPANY OF NEW JERSEY, HOBOKEN, N. J.

Mowbray & Uffinger, Architects.

Hoboken, N. J., attractive as it is in so many other respects, seldom delays the footsteps of the returning voyager from Europe by the charm of its architecture. We can therefore understand why the building here illustrated represents not only an important addition to its list of commercial structures, but is regarded by the native as highly and notably artistic. The building is a respectable bit of work—provided, of course, that we accept the current architectural standard. The colossal order, throughout its details, possesses in all its force the charm of familiarity. The attic, presumably, is "pure architecture," and innocent of structural significance. If these be sins, the architects of the building are in good company, for the professional leaning at present is decidedly "historic," and the free borrowing that results is rarely conditioned by structural realities. Could not something better than the acroteria have been placed on the attic against the skyline? Perhaps here the architects' means were insufficient to allow sculpture of a more salient character.



RESIDENCE, 35 EAST 68TH STREET.

Carrère & Hastings, Architects.

This is a recent addition to the district of fine residences east of Central Park, New York City. Its dimensions are moderate, if not for the region modest, but the design is florid, and the building is likely to arrest an amount of attention it would not receive but for the "pretentiousness" of its architectural treatment. In this case, however, the exuberance of ornament is handled with skill and discretion, and very clearly avoids defects of over-muchness inevitable in this sort of work when produced by designers of less experience. Indeed, there are only a few architects in the United States who have acquired an idiomatic mastery of this style. The designers of this Sixty-eighth Street residence are evidently of the few—shall we say "select?"—who have attained to vernacular ease. Every detail of the design is obviously "placed" and shows an amount of study that itself deserves study. The strongly characterized, solid ground floor, the well-marked string course above it, the charming and refined treatment of the first floor windows admirably suited to receive the hood-like festoons crowning the arches, the careful subordination of the higher story cleverly framed by the bracket supporting the balustrade—all of this is recommended to the attention of the large tribe of bunglers who are busy disfiguring our streets with crude extravagances of the "French Style."



RESIDENCE.

East Orange, N. J. Ludlow & Valentine, Architects.

This design indicates the greater ability and the far greater amount of careful architectural study that is to-day going into the production of the "average" better-class suburban dwelling. The central feature is well conceived from the picturesque point of view. Of course, in a sense it is mere cabinet work, but then it will not do to hold our timber architecture to the test of construction; indeed, the thesis might be maintained that the constructional sense for the "real thing" in architecture has been blunted from the beginning in the United States, by the cheapness and abundance of lumber. We began by imitating in wood the forms that naturally belong to more durable material; and in turn this imitation, by popularizing decorative details at the expense of constructional verity, reacted upon work done in brick and stone.



Princeton, N. J.

LIBRARY, PRINCETON COLLEGE.

This is one of the most delightful bits of Gothic work produced in many years. The architect shows a true sense for the spirit of the style he adopted; and withal he has not produced a medieval building, but one that is as it should be, essentially modern. The disposition of masses, the relation of solids to voids, the grouping of parts, the treatment of details are admirable. The building is noticeably free from the chief defects of modern Gothic work—hardness of line, stiffness of form, mechanical coldness. The designer has shown discretion in the limitations he has imposed upon himself for it is doubtful whether it is possible or desirable in these days to incorporate in our secular buildings, even those devoted to collegiate purpose, any more of the Gothic elements than we have in this building before us.

THE ARCHITECT'S LIBRARY

POMPEII: Its Life and Art. By August Mau, German Archaeological Institute in Rome. Translated into English by Francis W. Kelsey, University of Michigan. With numerous illustrations from original drawings and photographs. New York: The Macmillan Co.; London: Macmillan & Co., Ltd. 1899. Pp. XXII.; 509.

The full value of Pompeii as a place of study for architects has hardly been felt. It has been considered too ruinous and also too small and humble in its parts and its appointments. The student of architecture has desired his Greek or his Greco-Roman buildings more nearly intact, and, therefore, has studied the temples at Paestum in Sicily, and at Athens; in Rome, Nimes, and Vienne; his separate columns of later type from the Roman Forum, Assisi, Milan, and the Athenium Olympieium, and his vaulting from various amphitheatres and halls of thermae. Some of these are, indeed, ruinous enough; but some part has remained sufficiently intelligible for use; whereas in Pompeii the ill fates have ordained that the buildings are everywhere shorn off at ten feet or thereabouts from the ground level. This came of the inadequate work done here by the volcano; for the shower of ashes never reached much above the ceiling of the low-pitched ground-floor rooms, and everything that was above them was left in the open air, like a town half submerged by a watery flood, and was thereafter gradually pulled to pieces and carried off; while the owners of property, and even those who were not its owners, dug down into the still soft mass which concealed and embedded the buildings, cut through walls and dug horizontal tunnels through the half-hardened mud, and carried off not only the precious movables, but even some things which might have been thought as fixed as the walls themselves. And as for the small scale and generally provincial simplicity of the buildings, Pompeii was, of course, a town of the third class, and nowhere was there a gigantic forum, portico, or basilica like the unparalleled structures of the Roman emperors and their great captains in the central and the provincial capitals.

This characteristic of minor importance, cost, and dignity is not, however, a serious hindrance to the student. If our classical revivalists were in earnest and really cared to know what the people of classical antiquity have left for their consideration, they would have formed a society long ago to study Pompeii and what little is known of Herculaneum. The book we are considering shows the way in which this was to be done —the way in which it still may be done—the way in which we hope to see it done—whether the building of the twentieth century is to be inspired more or less by classical examples or not. The history of art is equally important whether we propose to draw from it lessons of immediate application or not. And the secret is judicious restoration; not in the way of irremediable and generally ruinous changes made in the buildings themselves, but in the way of drawings and models multiplied as far as may be necessary and capable of comparison one with another. Now, in this matter of restoration, it is to be observed that our only means of access to Greek architectural art is through just such restoration, executed or imagined. No man of our time has ever seen a Greek building as the Greeks saw it, or as they meant it to be seen. The Parthenon is a beautifully picturesque ruin, that is to say, an accumulation of forms and a mass of soft color which are delightful to the eye guided by memory and imagination, but it is, as it now stands, not architecture nor the embodiment of an artistic thought of any kind. It is fine as a weather-worn cliff is fine. Even the most perfectly preserved Doric temple, the Theseion in Athens, or the great temple at Paestum, has lost its sculpture, its crowning members, all or part of its roof, the ceiling of its pteroma, the sequence of steps to its stereobate, its

pavements and its investing polychromy which made of it a hard thing for us now to imagine to ourselves. When we talk together of the glory of Greek art, or sit down alone to write something concerning its magnificence, we draw upon our informed imagination to an extent which it is a little difficult for the writer and the speaker himself to believe. And so if we are to get out of Pompeii what Pompeii has kept for us we must restore! We must fill up the plan of the triangular forum with the Grecian Doric temple which fronted upon it; we must study the four square and simple outlines of the great forum with the temple of Jupiter a little askew at one end, and the two memorial arches on different lines and not even parallel lines each with the other. The plan of the basilica and of the adjacent temple of Apollo with its enclosure and colonnades must be studied, and, the obvious and inevitable columns and piers being in our imagination reared again where their substructures show them to have stood, the only less obvious superstructures are to be put in place still by means of our mental processes. It is not so very hard! Even before Weichardt's folio of proposed restorations appeared it was not hard to form a mental picture of the Temple of Apollo raised on its podium with six Corinthian columns in front, with a long flight of steps, a veritable New York stoop, leading the visitor up from the pavement of the forum to the temple floor, with the great square altar in front of this, and the colonnaded portico two stories high enclosing the building and its fore-court within a peristyle one hundred and fifty feet long in clear open space, and a bounding wall which encloses nearly half an acre. It has been said that it is not hard to form such a mental picture; some preliminary information is necessary indeed before the student will begin to allow his reconstructive imagination to work; no doubt he must have information as to the reasons why certain fallen columns are ideally placed without hesitation in the colonnade of the second story. The more information one has the better one's imagination works in anything wholesome and reasonable, but it requires only a few days' work in the public quarters of Pompeii, and a very limited acquaintance with the documentary evidence which has been made accessible to everyone, to enable the student to think for himself swiftly and without serious danger of error.

For such a student, then, Pompeii has that which nothing else in the world, except the little explored ruins of Herculaneum, can give, namely, the daily habit of architectural work among the Italic peoples of a very early time—among the Greek colonists of the fifth century B. C., and the following years—among the Roman settlers of the Republic, and among the united populace, the subjects of the early Empire. Four periods, as Herr Mau has accurately described the chronology of the place—four periods are distinguishable, and these are perfectly differentiated each from all the others by the materials used in building, the construction, and even more notably by the systems of architectural and purely decorative design which are employed. Walls built of solid blocks of stone were as common, even in the small houses of early periods, as brick-faced rubble masonry was of later work. Even the rubble walls are faced now with bricks now with reticulate work of small, shaped stones and by these means dates can be approximately fixed.

Part II. of the present book, which is entirely devoted to the houses of the town and a villa or two outside the walls, gives a chronology, easy to follow and easy to accept, of 400 years of domestic architecture on the shores of the Bay of Naples. Even the repairs made after the earthquake of 63 A. D., and the more deliberate changes of design where a rich man decorated his house in a more modern taste, aid our studies of architectural evolution by showing the completeness of the modification which had come to men's ideas of adornment. The history of the change of styles is always attractive, and has lessons in it for the designer as well as for the archaeologist. In any one of half a dozen great mansions of Pompeii this history is in the most interesting way made clear and easy for every one to read. Moreover, the requirements of a family in a warm climate with a short winter are found to have been in the two centuries ending with 79 A. D. very nearly what they are now in the same regions of the earth. It is a little surprising to find the author of this most valuable book commenting especially upon the comparative indifference of the Pompeians to preparations for artificial warming. Every person who has lived for awhile in Italy knows that not only the people living around Naples, but even the people living in and around windy Florence, and even the inhabitants of the

moist and far northern lagoons of Venice are not merely indifferent, but even hostile to the warming of their houses in winter. With ice forming in the streets the Florentine shopkeeper sits in the open room which forms the emporium and adds more overcoats or more shawls as his or her sex may be and as the weather grows colder. The Venetian, with a sea fog filling the court outside his windows, and the thermometer at 35 degrees F., works quietly at his task in his fireless room with his feet muffled up and a cap pulled well down over his forehead. It is the people of the north, the inhabitants of climates where the cold is rigorous and long continued, it is they and not the southerners who warm their houses, and the distribution around courts of the Pompeian mansion differs from the arrangement of the modern house of central Italy chiefly in the fact that from some cause not now in question, land is more valuable to-day than it was under the Empire, and, therefore, third stories and fourth stories are piled upon the building which the ancients would have made partly of one high story and partly of two less high.

As for the public buildings, the basilica, the long stretches of portico which enclosed the different public squares, the cloth hall (Eumachia's building), the market, the three simple blocks which together make up the City Hall, the lesson each of these has for the modern architect in the very frequent cases of insufficient space, is hardly necessary to urge. The simple appliances, the inexpensive devices, the admirably efficacious ways of adornment of these halls and porticoes, requires only the brief hints of those who have put this and that together and thereby discovered the real significance of the remains to recommend them to all modern students. And the reason why this latest book on Pompeii is of peculiar importance is because here, for the first time, all this valuable matter has been treated systematically. The table of contents at the beginning, and the index at the end, lead directly to a continuous study of the subject or to any part of it. The only fault to be found with the book in this way is a singular indifference to the references by means of figures and letters which the different plans and topographical maps contain. It is a puzzling business to locate the different parts of a plan where half of the letters inserted are ignored in the legend or where the figures are arranged in the legend in any way except the usual sequence. With this exception the book is almost faultless as a work on the antiquity of Pompeii, and one is ready to believe what the Preface says of its being the result of twenty-five years of almost constant labor.

OLD COLONIAL HOUSES OF THE CAPE OF GOOD HOPE. Illustrated and described by Alys Fane Trotter. With a chapter on the origin of old Cape Architecture. By Herbert Baker, A. R. I. B. A. London: B. T. Batsford, 94 High Holborn. New York: Chas. Scribner's Sons.

There are but few real Architectural Byways remaining to-day. The kodaker is everywhere, so is the searcher for novelties—even novelties in the forgotten aspects of familiar things. Probably we are indebted to the Boer war for this volume, by which we are really taken upon an excursion out of the beaten tracks and carried before a phase of architecture of which few are cognisant. At the first sight of the illustrations in this volume one is almost instantly struck by the historical relationship that exists between New York and the Cape of Good Hope. The high-pitched roofs, the fantastic gables, the invariable "stoep," promptly recall the parent from whom at practically the same period the two colonies sprang. The old houses that remain at the Cape speak graphically of the earlier settlers sent out from the Netherlands by the Dutch East India Co. to Table Bay. Not many "originals" remain. The major part of them have been either pulled down or burned or destroyed by time. Those that remain reveal the Dutch sense for the homely, the quaint, the picturesque. Many of the houses are of imposing dimensions, and indicate no little taste and a high degree of comfort, if not of wealth. The homes of these early settlers were constructed by the aid of slaves brought over from Madagascar. The roofs are heavily thatched, and the exteriors are constructed of mortar. The colonists were provided with brick and tiles, some being manufactured at the Cape, and others being sent over from Holland, but in either case, no doubt, they were dear, and the preference was given to the more plastic material. Within the houses teak and ebony were used, these woods coming from the Dutch East India Company's possessions in India. Colonial woods also were employed—yellowwood, stinkwood, ironwood. In building, the style of architecture prevalent in the mother country

naturally was adopted, but soon with modifications, due to new conditions, new materials and new requirements of the new country. With plenty of land the plan of the home was extended and its altitude diminished. One story became the rule. The scroll-framed gable of forms familiar in the principal streets of Amsterdam and the houses in the Heerengracht were copied and some of the survivals at the Cape now preserve for us shapes lost at home. Indeed, Mr. Baker reminds us that the commonest types of gables surviving at the Cape are seldom seen to-day in Holland or Belgium. Curiously, however, they are common in the southeast of England, in farm houses built there by French refugees. This book is well worth perusal by our architects. It contains abundant illustrations.

A LANDMARK HISTORY OF NEW YORK. By Albert Ulmann. New York: D. Appleton & Co.

In form this is a book for children. In substance it is likely to be quite as interesting to their elders. We are sorry the author adopted the conversational form of telling his story, introducing an imaginary professor and a lot of impossible children to carry along his tale. The essence of simplicity does not lie in these devices. The author might still have given us the great deal of valuable information that he has accumulated in a shape that would have interested the junior reader without confining the book to the nursery. That it is really possible for an adult to read the book in the form it now possesses is a high tribute to many sterling qualities of the work.

THE PRINCIPLES AND PRACTICE OF LINEAR PERSPECTIVE, developed along original lines, etc. By Herman T. C Kraus, C. E. New York: Norman W. Henly & Co., 132 Nassau St. 1901.

There is apparently no end to the production of books on perspective. A great deal of pains, labor and patience have been given to the subject by numberless authors. The fact that books are still produced year after year covering precisely the same ground, must be regarded as evidence that it is felt that there is something lacking in the methods of presentation. Certainly, the subject is not one that permits of perpetual research and new discoveries. As a matter of fact, we believe that the greatest evidence of an author's power of exposition would be furnished by his ability to make clear, to the uninitiated, the simple principles of perspectives. Nearly every volume that we know of, dealing with this subject, tangles up the beginner at the very outset in a mass of confusing descriptions and technical phrases, the meanings of which have not been made clear beyond all peradventure of misunderstanding. Why cannot some one provide us with a book on perspective similar in its way to Viollet-le-Duc's "How to Become a Designer?" The thing surely can be done, and it is surely worth doing. The only simple book on perspective that we know of is the one produced by L. W. Miller, and so far as the practice of perspective is concerned, G. A. T. Middleton's work, "The Essentials of Perspective," published originally in these pages and reprinted by B. T. Batsford of London. Mr. Kraus's book is not exactly to be classed among the many hopeless, obscure, tangled and distracting books on perspective. On the other hand, it lacks clearness. It is not at all likely to seize the student's mind at the beginning and carry it along to a full mastery of the science. However, to those who already know something about the practice of linear perspective, the volume will be valuable. It will establish them on the strong ground of legitimate practice.

SCHOOL ARCHITECTURE. By Edmund M. Wheelwright. 350 pp., 250 Illustrations. Boston: Rodgers & Manson.

This is a sound and valuable work, the nucleus of which was a series of papers on the American schoolhouse printed in "The Brick-Builder" some time ago. The matter then published has been recast with large additions. For instance, in the book a great deal of space is devoted to the treatment of schools abroad, a subject slurred in the periodical. As it stands, the bound work sets forth the general requirements and features of schools; it illustrates the elementary institutions of Germany, Austria, Switzerland, France, Great Britain and the United States; the secondary schools here and abroad; the manual training and Mechanic Art Schools in this country, and those training schools for teachers termed among us "Normal" schools. Heating, ventilation and sanitation also come in for observation, and a complete set of specifications for American schools are included. The author, it is hardly necessary to mention, is the well-known city architect of Boston. Mr. Wheelwright's own work is of a high char-

acter, and his experience in the designing and construction of schools has been, we judge, as great as that of any other architect in the country. Consequently, in treating of contemporary productions, and when discussing contemporary requirements in this country, he writes as an authority. In his pages he has illustrated some of the finest schools, private and public, in the largest cities in the country, and it is pleasant to observe how high the average of architectural work is. As to equipment the American school is by general consent decidedly ahead of buildings abroad. Mr. Wheelwright's work is a solid addition to the architect's library. It is to be regretted, however, that the illustrations, in most cases, are but reproductions from half-tones. The result is a blurred effect which almost precludes a close inspection of detail, but there are plenty of plans in the book, and these are of prime importance.

STURGIS'S DICTIONARY OF ARCHITECTURE. A Dictionary of Architecture and Building, Biographical, Historical and Descriptive. By Russell Sturgis, A. M., Ph. D., Fellow of the American Institute of Architects; and many architects, engineers, painters, and other expert writers, American and foreign. In three volumes. Vol. I., A-E. Vol. II., F-N. New York: The Macmillan Company. London: Macmillan & Co., Ltd. 1901. All rights reserved.

The need of a new dictionary of architecture will be admitted by all students of that art. Even the "general reader," whoever he may be, if he be an intelligent and inquisitive reader, must often feel the need of fuller explanations of architectural terms or facts than even the most elaborate of general dictionaries supply. And, as Mr. Sturgis points out in his preface, there is no provision in English at all adequate to these needs. One interesting beginning of an attempt to supply it seems to have escaped his notice, and that is the "Dictionary of Architecture and the Allied Arts," of which the publication was begun by Messrs. Audsley about twenty years ago, but never carried further than the letter B. The three volumes published are perhaps arranged on too much the encyclopaedical plan to be available for the uses of a dictionary, and indeed this may be said of Viollet-le Duc's famous "Dictionnaire" so called. That is to say, it does not fulfil the essential requirement of a dictionary which Mr. Sturgis rightly defines as "fitness for ready consultation." A small particular fact cannot always be easily found from a work which consists of a series of monographs, even interspersed with briefer definitions. Nevertheless there is some very good work in the fragment of the Audsley "Dictionary." Such important titles as "Arch," "Apse," "Basilica" and the like are treated with a very satisfactory amplitude and accuracy. One will look almost in vain for equally exhaustive monographs in the present work. The editor's preface gives a sound explanation why, and in doing so lays down the plan upon which this dictionary has been compiled. It seems to us the correct plan, and the only one which can be made to combine fulness with "the fitness for ready consultation," which is proper and indispensable to the idea of a dictionary. That is to say, there must be an elaborate system of cross references. The reader who desires to know simply the meaning of an architectural term must be able to have his single curiosity assuaged by turning to that title. On the other hand the reader who desires a treatise upon a subject must have his needs consulted. The only combination that will meet both requirements is the division of a complicated subject into a series of short articles, in the nature of definitions, each under its own alphabetical title. As Mr. Sturgis explains in his preface:

> By the use of these references the student may, at his pleasure, enlarge the description or the discussion before him by consulting two or three or perhaps a dozen articles. The possibility of such reference from one article to another may be increased indefinitely by the insertion of articles serving primarily as indices to other articles in the same work. Thus, in the book now presented, the article "Aboriginal American Architecture" refers to a great number of terms under which treatment of that general subject will be found; under "Columnar Architecture" will be found a number of terms, each of which will be found is defined in its alphabetical place, and by comparison of which the whole subject may be thought to be adequately presented. The value of this feature will be recognized by those persons who have ever thought how much we need a reversed dictionary—a book which shall tell us the names of the things which we know of and cannot "put a name to." Thus, in the matter of Columnar Architecture, it is sometimes desirable to find out quickly the proper term for the colonnade of seven columns; but no dictionary, unless elaborated in the way above suggested, will do that. It will only tell you that "heptastyle" means having seven columns, which is a different thing.

The Encyclopaedia Britannica is the most conspicuous example of the cyclopaedical, or monographic, as opposed to the lexicographical treatment, and everybody who has used it knows how different it is, how impossible

often to get from it a particular fact in a hurry. A British critic illustrated this drawback by pointing out the inutility for the consultative purposes of a curate straitened for time and preparing a sermon, of one of the Biblical monographs of Robertson Smith. The index which would be needed to make the stores of the encyclopaedia available for ready consultation would itself need to be of monumental proportions, and to be prepared with a diligence and an intelligence which would almost amount to genius. For the purposes of an encyclopaediacal dictionary there does not seem to be any fair question that the method pursued in the new work is the more available.

And certainly there can be no question, in the mind of any American student of architecture, that precisely the fittest editor the country affords has been chosen for the new dictionary. Mr. Sturgis's knowledge of the history of architecture is known already, as encyclopaediacal, to the readers of this magazine and still more to the fellow students who, in the Johnsonian phrase, have found in him "copiousness of information enhanced by facility of communication." Mr. Sturgis might, indeed, almost say for himself respecting his subject, as Johnson concerning his, that he "did not find that what he had not of his own was easily to be obtained." But he has also the advantage of knowing the most likely sources to invoke for parts of his subject which are as yet undescribed, at least in any popular or accessible form. Such, in the present volume, are Mr. Dellenbaugh's contributions, which, as the editor observes, comprise a somewhat complete essay on American antiquities cut up into short articles. The information they contain cannot be said heretofore to have been accessible to the general reader at all, so scattered has it been in special reports and monographs. Certainly, one would have to seek for a long time for the information what he finds here compendiously put under such titles as "Casa Grande," "Cliff Dwellers," "Communal Dwellings" and the like.

One's real estimate of the value of a work of this kind comes from the readiness and satisfactoriness with which it answers the questions he has occasion to put to it from time to time, and requires habitual consultation for its basis. In default of that test, he can only try it here and there and report the results. One of the first requisites of an architectural dictionary, as of an architectural work, is that of due proportion. It is in this that the skill of the editor is mainly seen, after, or in connection with, his choice of contributors and apportionment of the work to them. The necessity of conciseness being assumed at every point, what is the minimum of space for each title in which what the reader has a right to demand of it can be imparted? In these volumes the space varies from a line of definition to what may almost be called monographs upon important titles which cannot be subdivided. So far as can be judged from the process already described the apportionment has been made with successful pains and good judgment. The mere definitions are clear as well as brief, and, where it is necessary or desirable, are elucidated still further by the citation of examples. The detached essays extends sometimes, as in the case of Mr. Clipston Sturgis's article on "England" to fifteen pages. But such papers as those of Professor Hamlin on "Byzantine Architecture" and "Egypt," are models of concise exposition. One feature of the work which is to us a novelty in architectural dictionaries, and as useful as it is novel, is an explanation, under the title "Architect," of what that term actually denotes and connotes in modern practice in the leading building countries. Professor Sabine has introduced another novelty by preparing a paper on "Acoustics," in the architectural application of that science, which is so clear that the lay reader cannot find any difficulty in understanding it, and which the architectural practitioner will be likely to distrust on the very account of its clearness, considering how his counsel has been darkened before by obscure treatises which he recalls with shudderings, as also he is likely to recall his own attempts to understand and apply them. In short, the reader is likely to find in this "Dictionary" explicit answers to all the questions he has a right to ask of it. And that is the highest praise that can be given to such a work. To say so much is to say not only that it has no rivals in the English language, but that it is not likely to have any. It is quite necessary to the intelligent architect and the intelligent student of architecture, and while it is likely to be supplemented by the lapse of time and the accumulation of knowledge, it is not likely to be superseded.

It would not be fair to pass over the illustrations without pausing for particular praise. They are very profuse, and comprise well-printed half tones, in reproduction of actual buildings, as well as woodcuts of plans and details and of complete buildings of which photographs are not available. But they all have the primary merit of being illustrations. The editor seems to have laid under contribu-

tion all that has been done in architectural illustration, so far as it was applicable to his purpose, not only the familiar works of Viollet-le-Duc and Fergusson and Street and Parker and the like, but much more recondite sources, unknown to the ordinary student. The result is that it very seldom happens that any definition is not elucidated by cuts when these are more elucidative than the text. Famous buildings are expounded by plan and section when there is occasion for these as in the Erechtheum, St. Sophia, St. Paul's and Chambord, but less familiar views are given when it is in these that much of the interest resides, as in the view of the Certosa from the cloister, the cloister terrace of Mont Saint Michel. the magnificent apse of the Abbaye aux Hommes (frontispiece), so much less known than the so much ruder and worse composed West front. So that, besides being primarily illustrative, the illustrations are secondarily and incidentally very instructive and entertaining on their own account. Nor is the illustration by any means confined to ancient buildings. Along with all the old favorites "which no dictionary of architecture should be without," we have such examples of modernity as the Bourse and an apartment house in Paris, the latter apparently of the last decade; the Museum of Natural History at South Kensington and the City Hall and the Academy of Design in New York. So well chosen and so well presented are the illustrations, indeed, that it is a pleasure to turn over the pages of the handsome volume, even for a reader who has no immediate occasion to consult it for information.

EARLY CONNECTICUT HOUSES.—An Historical and Architectural Study. By Norman M. Isham, A. M., Architect, and Albert F. Brown, Architect. Providence, R. I.: The Preston & Rands Co.

We have no hesitation in saying that this is the best book, from the architect's point of view, that has been produced dealing with Colonial life. The region covered by the author's investigations was, if we may say so, one of the most truly "Colonial" in the country, embracing as it does the old settlements at and around Hartford, Windsor, Westhersfield, New Haven, Quinnipiak and New London—in other words, the Connecticut colony and the New Haven colony. The period covered extends from the years 1635 to 1750. The authors have been diligent in searching for survivals, but apparently nothing remains of the habitations of the first settlers. For these they have, therefore, been obliged to have recourse to documentary evidence. As to the structures that still exist or that still existed when the authors had their work in hand, these have been subjected to a thorough structural examination, and the results form the substance of the volume—sketches, plans and elevations, while each house is also the subject of historical and analytical notes. Details are freely pictured and the views, showing the system of constructions adopted, are particularly interesting and valuable. Indeed, in scope and method this is precisely the book the architect needs.

OLD COTTAGES AND FARMHOUSES IN KENT AND SUSSEX.—Illustrations in one hundred plates. Printed in collotype from a special series of photographs taken by W. Galsworthy Davie, with some descriptive notes and sketches by E. Guy Dawber, Architect. London: B. T. Batsford, 94 High Holborn. 1900. New York: Chas. Scribner's Sons. $7.50.

Some of the most picturesque survivals of "Old England" are to be found in the smaller towns and villages of Kent and Sussex—those two thoroughly rural counties, which contain on the byways so many cottages and farmhouses of a particularly quaint and picturesque type, mostly half timbered, thatched and gabled buildings dating sometimes from the sixteenth century. The purpose of the authors of this volume has been to gather together some of the best examples of these "antiquities." Mr. Davie is an excellent amateur photographer as well as a professional architect, and the photographs he has taken for illustration are all of buildings of sterling merit, likely to be of interest to architects and artists generally. He has done his work exceedingly well, and the volume he has produced is a mine of suggestion for the practitioner in the United States dealing with country houses. The book happens to be particularly apposite at this moment when there is a decided attempt in progress to introduce the old "half timbered" work.

MILL BUILDING CONSTRUCTION. By H. G. Tyrrell, C. E. New York: The Engineering News Publishing Co. 1901. Pp. 40.

This book contains a great deal of good sound sense. All that the author says makes for solid and safe construction, but, the volume is professedly only a series of notes and illustrations dealing with a subject that would require much greater space for adequate presentation. The author confines himself to the common ground of every-day

experience, so that the perplexed and distressed seeking for a guide out of their difficulties need not apply here; but any one who wishes quickly to refresh his memory regarding information that he once grasped firmly will find this thin volume a very handy one to turn to.

ENGINEERING STUDIES. Part II., Roman Stone Arches. By Charles Evan Fowler, M. Am. Soc. C. E. Part III., English Stone Arches. By Charles Evan Fowler New York: Engineering News Publishing Co.

These are pamphlets containing a number of well-made and well-printed photo-engravings, to which short notes, historical and descriptive, have been appended. But the letter-press is of very little service. Fuller and more accurate notes, we judge, would be welcomed by engineers and architects. It is right, of course, to include among Roman Stone Architecture, bridges, such as: Sant' Angelo, Rome, that of Augustus at Rimini, or that at Alcantara, but what business has the Bridge of the Rialto or the Bridge of the Trinity at Florence among Roman arches? By the way, in the notes the editor assigns the year 1750 as the date of the construction of the Trinity Bridge. The bridge was built by Amminati, who died April 14, 1592.

RIPON. By Cecil Hallett, B. A. With 53 Illustrations. London: George Bell & Sons. 1901.

THE CATHEDRAL CHURCH OF WORCESTER. A description of the fabric, and a brief history of the Episcopal See. By Edward F. Strange. With 53 Illustrations. London: George Bell & Sons.

These two volumes are late additions to Bell's Cathedral Series, one of the most satisfactory sets of recent monographs. We have referred in these pages to previous issues, which now provide us with information concerning nearly all great Cathedral Churches in England, and put a deal of accurate information at the hand of the Architect and Archaeologist—in these days too often one and the same person. Each of the volumes contains the history of the cathedral treated of, a description and history of the exterior and of the interior, usually with a final chapter touching upon other historical buildings in the neighborhood of the Cathedral. The illustrations are abundant; but too often many of the half-tones are poorly printed.

THE WINSLOW TABLES. Diagrams for calculating the strength of wood, steel and cast-iron beams and columns. By Benjamin E. Winslow. New York: The Engineering News Publishing Co.

So much of the engineer's work consists of calculations, that it is little wonder that so many devices, literary and otherwise, are supplied to lighten this inevitable drudgery. In these tables the author provides a graphical method for computing the sizes of beams and columns. We have tested the work and find that its use effects a great saving in both time and labor, and the book, we are sure, will be a very welcome addition to the "assistants" in any busy engineer's or architect's office. This volume is said to be the first attempt of its kind aimed to cover the whole ground of ordinary practice.

OUTLINE OF ART HISTORIES. Vol. I., Architecture. By James Fred Hopkins. Illustrations. 242 pp. New York: Educational Publishing Co.

This is the first of a new series of art histories. The author, we believe, is a teacher, and he intends his book, as he says, for the "use of the teacher and for her boys and girls." This is the keynote of the book. After hearing it, we know what to expect—usually something superficial, and of course flowery in language. Superficial in a certain sense, Mr. Hopkins' work is. It is evidently the work of some one dealing almost entirely with his subject at second-hand. One can, indeed, follow the author's reading between the lines. There is also to be found in the book, particularly in the opening chapters, that tendency towards "afflatus" that marks, and in our judgment, mars so many books dealing with art produced by the dilettante. It would not be just, however, to Mr. Hopkins' book to leave it in this way. The work as far as it goes is solidly done, the commonplace facts of the history of architecture are well-given in an elementary sense, and the book is a decidedly valuable addition to the list of school-room art books. The illustrations are numerous, well-chosen and well-produced.

A. B. C. OF THE TELEPHONE. By J. E. Homans. New York: Theodore Andel & Co., 63 Fifth Ave.

As a sarcastic person once put it, "In these days, when the architect is called upon to know so little of so many subjects," it is interesting to note that an elementary treatise on the telephone has been provided.

There is much good reading in this book, and a deal of useful and practical information, likely at times to be needed within an architect's office. The book contains a chapter on Telephone Apparatus, another on the Theory of Sound, another on Electrical Principles, another on Electrical Quantities, and another on the History of the Telephone, followed by a chapter devoted to the different parts of the telephone, such as, the switch-board, party lines, telephone wire, automatic exchange, etc., etc. Of course, the telephone and electrical construction companies relieve the architect of most of the trouble involved in the installation of the telephone apparatus; but, particularly in designing large buildings it is important that the architect should know at least something of "current" possibilities. This book will bring one well up to date.

FURNITURE, DESIGNING AND DRAFTING, and Notes on the Elementary Forms, Methods, Construction and Dimensions etc., etc. By Alvin Crocker, Instructor in Furniture Design, Pratt Institute, Brooklyn. New York: Wm. T. Comstock, 23 Warren St.

Our readers are well acquainted with Mr. Nye, whose articles on furniture have appeared from time to time in these pages. This new work of his is a text-book for classes seeking an elementary knowledge of the forms and principles of sound design and construction. The author treats the subject very clearly, dealing in separate chapters with the chair, table, bed, etc. Methods of construction and design are illustrated. We are glad to find the author, in all cases, leaning towards rationalistic forms. The book can be recommended without qualification to the student, the architect in search of information, and to the experienced draftsman.

NEW BOOKS.

THE MYCENAEAN TREE AND PILLAR CULT, and its Mediterranean Relations. With illustrations from recent Cretan finds. By Arthur J. Evans, M. A., F. S. A., Keeper of the Ashmolean Museum, etc. London: Macmillan & Co., Limited. New York: The Macmillan Co.

THE FARMSTEAD. The making of the rural home and the layout of the farm. Isaac Phillips Roberts. New York: The Macmillan Co.

THEATRES. Their safety from fire and panic; their comfort and healthfulness. William Paul Gerhard, C. E. Boston: Bates & Guild Co.

SOME OLD MASTERS OF GREEK ARCHITECTURE. Harry Douglas. Great Barrington, Mass.: The Quarter Oak.

HERBERT VON HERKOMER, R. A. A Study and a Biography. By A. L. Baldry, London: George Bell & Sons. New York: The Macmillan Co. 1901.

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The
Architectural Record.

VOL. XI. JANUARY, 1902. No. 3

CERAMICS IN ARCHITECTURE.

New Uses for the Sharp-fire Variety.

SINCE Architecture entered upon its "Iron Age," the field of employment for ceramics for architectural purposes, which was already a very wide one, has been enlarged to an immense extent. Enameled terra-cotta rendered incalculable service in those wonderful countries, Assyria and Persia, whose influence upon the development of the arts in the western world it would be impossible to exaggerate. The impulse which led to this development has been represented by short-sighted critics as having come from Egypt and Greece. While Greece, true to the principles of the art of working in stone, was applying those principles with a logic and an energy which resulted in masterpieces whose ruins are still the admiration of the world, Assyria, handling another material, easier to paint and decorate, namely, burnt clay, had already produced monuments which, although differing in character, were not less beautiful. It is sufficient for us to mention here, as this article is not historical but deals with a practical, up-to-date matter, that admirable frieze, *The Archers in the Palace of Darius*, which is now to be seen in the Louvre Museum. In the twelfth and thirteenth centuries, while Gothic art was renovating the world of architectural forms, Persia was the scene of a new efflorescence of the eastern arts generally, and she produced in particular those splendid masterpieces of the fictile art which are so eagerly sought after by our museums and collectors—we mean the Persian tiles, those admirable and unsurpassed examples of decorative art. It would be an easy task to trace Persian influence, through Arabia and Morocco, into Europe, were the hispano-moresques represent, though in a specialized form, the oriental tradition of the ceramic art. During the Italian Renaissance, the researches of the Della Robbias in connection with enameled terra-cotta are sufficiently known. It is proper to remark here that the Della Robbia school remains a statuary school and that it employs the enamels and colors in the decoration of sculptured works, the enamel and the

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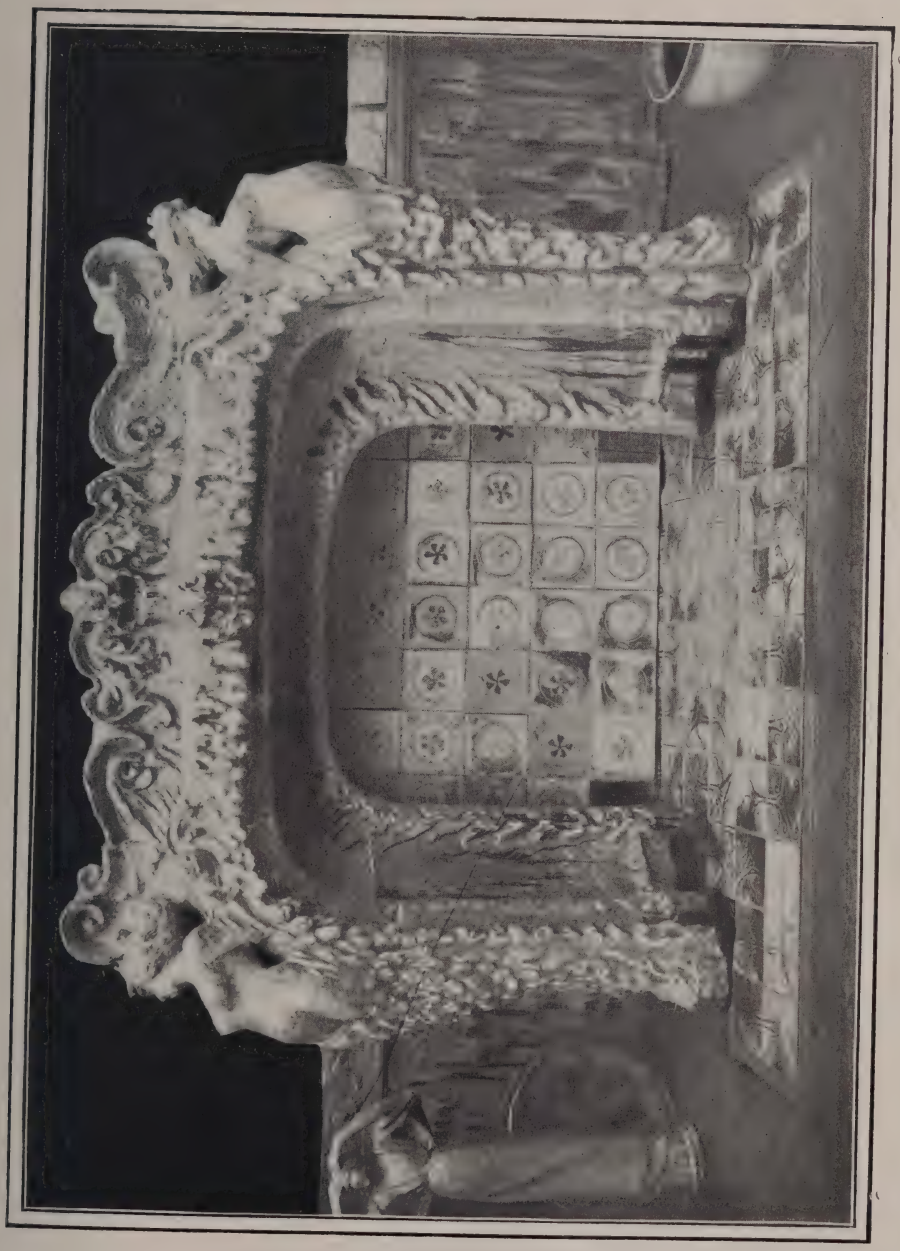
A FIREPLACE FRIEZE.

color being in this case a means and not an end. In the third generation of the Della Robbias, however, enameled and painted terra-cotta became more and more decorative and architectural. The Château de Madrid which Francis I erected near Paris was decorated entirely with enameled and painted tiles, but the relative fragility of the materials employed led to the dilapidation and ruin of this edifice, which, at the beginning of the sixteenth century, afforded a perfect type of decoration in enameled and painted tiles.

The neo-classic Renaissance, which made such cold, dry application of certain ancient principles badly interpreted, was intolerant of the brightness and richness of enameled-tile decoration, just as it was of polychromy in architecture and sculpture, from which the Middle Ages, like Antiquity, had managed to obtain such powerful effects. It was the reign of the dull and the colorless in architecture.

In our own times, which appear to us remarkable from the double standpoint of broadness of spirit historically (revival of types the most diverse) and of the constant movement towards forms suited to our own particular needs, the great value of enameled bricks and tiles in architectural decoration has been thoroughly grasped. Even in houses built of stone, enameled-brick friezes above the doorways or along the cornices lend brightness to the façade, while within, the fireplaces, revêtments, panels, cornice and doorway friezes, hall and bathroom decoration, and even the furniture, show what a prominent part enameled bricks and tiles play in the quite contemporary renaissance of decorative styles. In the United States the use of enameled bricks in building and decoration is even more widespread than in Europe.

But it is not with enameled bricks that we are concerned here. The considerable progress made in the potter's art in our time has led to parallel researches in what are called the sharp-fire arts. For twenty-five years efforts have been made in France to redis-



SHARP-FIRE CERAMICS—CHIMNEY PIECE.

cover the baking and enameling processes by which the marvelous Japanese stoneware was produced. It is a difficult, deceiving art, full of surprises and disappointments. To its new efflorescence in France the names of true and steadfast artists, such as Delaherche, Dalpayrat, Chaplet and others, are indissolubly attached; but examples of sharp-fire stoneware, with its characteristic beauty of material, enamel and color, have continued to remain rare and precious up to the present on account of the uncertainty of the results, due to the extreme difficulty of the processes employed and the variations caused by the action of the flame, air



SHARP-FIRE CERAMICS—PARTS OF FRIEZE AND OTHER OBJECTS.

pressure and smoke in the oven during the baking. The manufacture of sharp-fire stoneware is still an artistic, and not an industrial occupation.

At the same time, the quality of the products obtained by enameling and sharp-fire baking is such that it was to be expected that efforts would be made to utilize these products industrially. Sharp-fire stoneware, in fact, possesses to an incomparable degree the qualities of hardness, imporosity, brightness and fixity of colors. While ordinary enameled bricks or tiles—that is to say, those baked at a temperature ranging between 1200 and 1300 Fahr.—are still porous, the stoneware baked at 2430 Fahr. is absolutely imporous. Furthermore, in the case of the ordinary enameled brick the enamel remains as a coating on the brick and can be scratched with a knife. The sharp-fire brick, on the contrary, is so hard that it will cut china, earthenware and marble. Enamel

subjected to this high temperature impregnates, so to speak, the substance of the brick and makes one body therewith. The superiority of these bricks is evident. While the common enameled brick remains porous in spite of everything, is sensitive to atmospheric changes and allows damp to penetrate it, and while the enamel cracks in the sun, thus leading to the disaggregation of house fronts, the sharp-fire brick or tile remains entirely unchanged.

All this was known, but the difficulties connected with baking at high temperatures, and the delicate care with which sharp-fire enamels had to be manipulated, made the cost price of these products extremely high, to say nothing of the fact that it was impossible to be sure of always obtaining the desired result, and that the variableness of the enamel subjected to such temperatures made the process altogether uncertain. What might suit jugs and vases, to which the fact of their being unique gives all the greater value, could not apply to friezes, the characteristic of which is precisely that of presenting, in a multiplicity of tiles or bricks, a real unity.

Fresh researches, conducted by a French chemist in a close and rigorously scientific spirit, have led to sharp-fire ceramics being put once for all on an industrial footing, and we think that a brief account of the result of these investigations will interest the readers of the Architectural Record, for it is probable that the development of this art will take a large place in house decoration, internal and external in the twentieth century.

Monsieur A. Bigot is now able, after a long series of experiments, to manipulate his sharp-fire enamels with such sureness that he can turn out a set of tiles, bricks or slabs absolutely equal in aspect, thus rendering it practicable to utilize these products in the architectural decoration of houses. We give here a few examples of his latest work, but the variety of possible productions is really infinite. One can have plain slabs, on which only the glazed enamel decoration figures, or slabs with an arabesque, or any sculptured subject—animal or floral—where the enamel accentuates the reliefs and gives the sunk parts a very effective appearance of depth; or again, larger sculptured pieces, such as ornamental chimney-pieces, cornices, etc. To all these subjects the fusion of the enamel and the play of the flame impart an incredible vividness and brilliancy.

In addition to the material qualities possessed by these sharp-fire tiles—qualities which will enable them to supersede the ordinary bricks and tiles as soon as they are put on the market—we must mention one of their most attractive merits, namely, the endless variety presented by one single set of tiles. In a series



SHARP-FIRE CERAMICS—A BUST.
(In possession of the Architectural Record.)

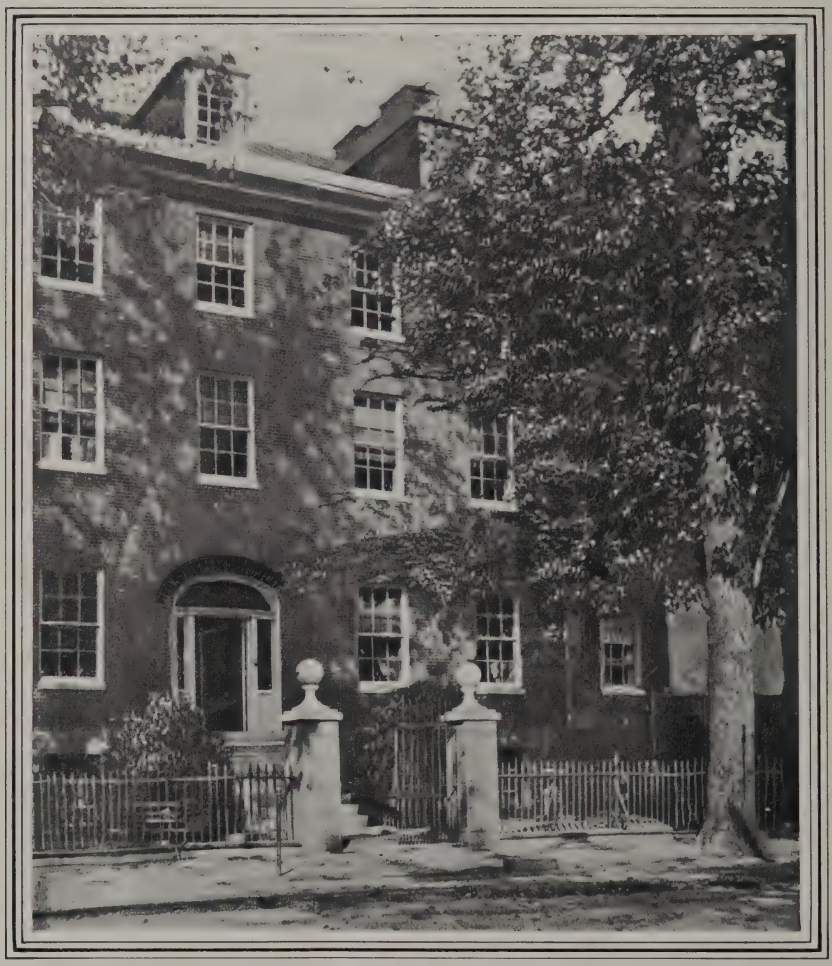
made of any given enamel the play of the flame, the action of the heat, imperceptibly different here and there in the oven, will give each tile an individuality of its own while leaving it fundamentally similar to all the other tiles of the series. Thus we have no longer the uniform, frigid tints of the ordinary enameled brick, but a thing with some shading about it, something more lifelike and



DECORATIVE PANEL IN BIGOT TILES.

truer to nature. It is somewhat like the leaves of a tree—they are all the same, and yet no two are precisely similar.

The art of sharp-fire pottery will restore to our decoration the life and variety which it now lacks, and everybody who takes an interest in the progress of the decorative arts—one might almost say in the renaissance—will carefully follow the latest investigations in this field. *Jean Schopfer.*



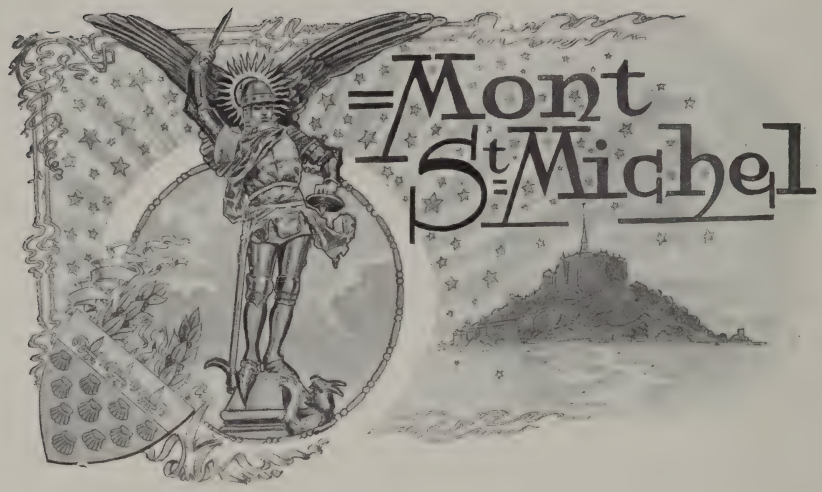
HOUSE ON COURT TERRACE.

Frederick, Maryland.



THE CHATELET.

This is the entrance to the Abbey proper, there being three fortified gates outside of it that give access to the Mount. It is considerably earlier than the girdle of fortifications at the base of the Rock, the date of it being given as 1257, and appears impregnable to a besieger without artillery. In fact, Mont St. Michel was the only strong place in Normandy that defied Henry V., the victor of Agincourt, repelling two attacks of the English, one in 1417 and 1423. Henry VI. ineffectually bombarded it in 1427 with stone balls, and two of his cannon, captured or abandoned, are still to be seen flanking the second gate of the fortress.



ARCHITECTURAL DAYS. No. 1.

A First Day in Europe.

The hand of little employment hath the daintier sense.—Hamlet.

IT was not my first first day in Europe. That had passed a good many days before. As was usual with good Americans in those old days, before the German maritime competition had set in, it had been passed in the shade of the cloisters and the "Rows" of Chester. How good it is of the English to keep this antiquity unspoiled, for the first impression of visiting Americans, where it shall so swiftly efface the reminiscence of Boston that is constituted by Liverpool! Things have changed now, and Southampton, or Cherbourg, or Havre is as apt as the Cove of Cork to be the passionate pilgrim's landfall, and any of these towns as the brown parochial little cathedral to give him his first taste of Europe.

It was Cherbourg that happened to be our port, and, that the fates might do their handsomest by me, they had shipped by the same steamer an eminent architect of Chicago, who was also, what the term does not, perhaps, necessarily connote, the most mellow and amiable of traveling companions, with the additional advantage that, in virtue of a boyhood spent at the École Centrale, in Paris, his French was of an impeccability. Seeing that neither of us had ever seen the west coast of Normandy before, nor was likely to see it again, and having our imaginations additionally inflamed by the copy of Mr. Percy Dearmer's delightful "High-

ways and Byways in Normandy," in the possession of a fellow passenger, we conspired to let the Exposition wait while we gave one day to the country, according to the prescription of the American politician; the more as Mont Saint Michel, which, according to Victor Hugo, is to France what the Pyramids are to Egypt, was but eighty miles away, and at the base of the blunt peninsula, of which Cherbourg stands near the tip. And Coutances and Avranches were on the way.

To the picturesque tourist, Cherbourg has about as much charm as Liverpool. Baedeker, who by the way is less appreciative and satisfactory about Normandy in general than the obsolescent Murray, describes it as "modern, clean, well built and comparatively uninteresting," which may be called a conservative estimate. The breakwater and the docks are the features of the place, of great interest to engineers, of great impressiveness even to laymen who recall the secular struggle with the elements, since the days of Louis XVI., the struggle like that of building the Eddystone, that it took to establish the dike. To an American it is impressive by dint of the "awful orderliness," which, according to Mr. Kipling, "cows" him when he first encounters Europe, but it is also of unmistakable modernity. Decidedly, that is not what we "came out for to see." A still more startling manifestation of modernity, and one of its ugliest, was vouchsafed to us as our lighter steamed in, in the gray of the July morning, for apparently the whole available French navy was riding behind the mole. There had, in fact, just been a great naval review by the President of the Republic, the foliage of the triumphal arches erected in whose honor we presently saw still withering in the streets. In the expression of ugliness and brutality in their modern war ships, as, as in the arts of expression in general, the French lead the world, and this holiday squadron looked almost grimmer than had looked, two years before, the returning victors of Santiago in New York Bay, leaden war paint and all. The actual formidableness is, of course, another matter. When that frightful sea monster, the Jean Bart, appeared in our waters to represent France at the Columbian celebration, a practical British naval officer is reported to have observed of the competitive exhibition: "That Frenchman is the dirtiest looking of the lot, but really she doesn't amount to very much." Whatever the expert might say to the efficiency of the assembled Frenchmen, the inexpert could not help being immensely impressed, and thinking how a Chinese admiral would rejoice to have monsters of such hideous mien to add to his masks and stinkpots, and other apparatus of intimidation.

We saw without envy, indeed, with conscious superiority, the steamer special pull out with our late shipmates, for Paris and the

Exposition, leaving us with an hour to kill before the train should start from the other station, that was to drop us at Pontorson, the station for the Mount. Cherbourg is so "comparatively uninteresting," that even an hour there is hard to kill, especially before people are up on Sunday morning. And, in fact, it was much more than an hour. During some days in Normandy, only one train on the Great Western system was on time, and that I missed because I was experimentally certain that it wouldn't be, and resented its punctuality as perfidious. But what can you expect of people who translate "Stopovers Allowed," on their time tables, into "Solutions de Continuité Autorisées?"

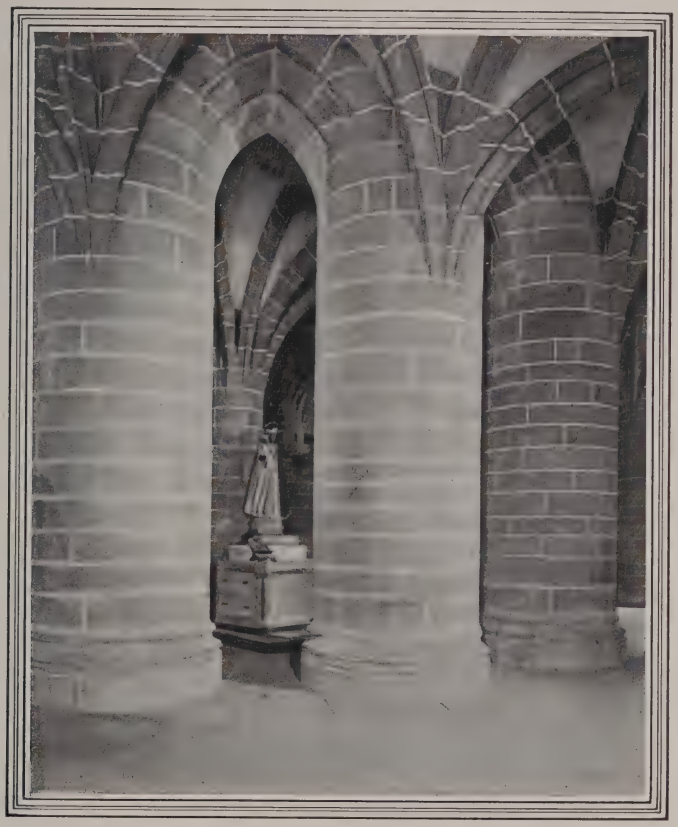
It is only when he has cleared the long cut through which the road passes from Cherbourg, and left Cherbourg behind him, that the passionate pilgrim finds himself unmistakably three thousand miles and several centuries from home,—

In that New World which is the Old.

Nay, before he has cleared the cut. The cut itself is rather ragged as to its unsodded slopes, unkempt in comparison with the best English lines, and it would be thought rather slovenly on the Pennsylvania. But along its bare and gullied sides spring profusely the field flowers which assure the American tourist that he has changed his skies. They have a general resemblance to what he may see at home, but they have so much more of depth and life of color than even our autumnal herbage, and at midsummer the burning yellows, the red flame of the wild poppies, the rich purples, dim to effacement the memory of the American flora. When one comes, at the stations, upon the gorgeous and incomparable roses which are one of the chief triumphs of French gardening, he is enabled to perceive how much genial nature has assisted ripe art in their production. But it is only when one has cleared the cut that this wilderness of bloom takes its place as a mere detail in the furniture of the landscape.

How fortunate we are in making this entrance into Normandy on its most charming side! Via Havre and the Seine it is almost wholly the handiwork of man that attracts and holds us. The landscape for the most part is but tame. But this rich and rolling country, with all the evidences, and even more, that the Seine valley gives of immemorial tilth and habitation, is far richer in turns and surprises and unexpected points of view, insomuch that it keeps two traveling companions busy, summoning each other from one window to the opposite not to miss any of its sudden revelations. "A park-like country," my companion aptly calls it. It is interspersed, at just the right spots and intervals, with groves that seem to have been planted by an artistic landscape-gardener

for the pleasure of the voyager, and that sometimes have in front almost the look of forests, until one takes them in flank and finds that the plantation is but a strip a few trees deep. The exposure brings to his mind that the decoration of the landscape is by no means the primary object of the plantation, that in this country,



THE CRYPT OF THE GREAT PILLARS.

This massive crypt is sometimes described as of the eleventh century, being confused with other work on the same level. But the completeness in the piers of the arrangements for vaulting and the excellence and refinement of the workmanship would suffice to discredit this date. As a matter of historical fact, the crypt was begun as the foundation of the existing apse, and as part of the general plan of it, in 1453. Nothing shows more forcibly the unfailing sense of fitness which presided over the work than the fact that the massiveness and simplicity of the crypt were of the same design with the elaboration of the superstructure.

where nothing is wasted, timber is a crop like any other, a crop sown and reaped by instalments. But the discovery does not diminish, if it does not even enhance, one's delight in the aspect of the wood harvest, any more than the narrow strips of root crops, green brown or yellow, into which the incredibly frugal and patient tiller has divided the produce of his infinitesimal patch of soil. So

minute is the farming that the space cannot be spared for fences, and that peasants whose holdings adjoin turn their furrows on each other's land in alternate years.

To us, at a junction, presently enter a British bridal couple, notable and distinct among the throngs of French people "making the Sunday," and proceed, with some plausibility, to execrate the



THE LACE STAIRCASE.

The sense of fitness shown in the crypt is equally noticeable in the "lace staircase" of several centuries later, in which the surface of a flying buttress is utilized for a protected flight of steps. Rich as the work is, it shows nothing improper to the intractable granite of which it is composed, and its ornament is simply the elucidation of its structure.

system which has left them to find their own undirected way to the Mount, which is their goal also, and has all but carried them off, unwilling and unaware, straight to Paris on the main line express from Granville. To then the country seems "quite English," South English, "except for the building." Certainly it is more characteristic of England than of most of France that the traveler sees who makes his way to Paris from one of the channel ports,

this picturesque and varied landscape, with every now and then a river, which might be "Yarrow,"

> Winding through the pomp
> Of cultivated nature.

Every prospect pleases, and man by no means appears vile. The Norman peasants, too, are making holiday, at least the *paysannes*, for the *paysans* are somehow much less in evidence, and very wholesome and human they look, with their white coifs, their black gowns, enlivened, even among the young girls, only to a sober gray, their homely neatness, their shrewd, kindly, weather-beaten faces, and even their toil-worn hands. It is one of our distinctions that American women do not share the labors of the field. If I am not mistaken, Uncle George pointed it out to Rollo with patriotic pride. But one would not like, patriotically, to institute a comparison between the Norman farmers' wives and daughters, and the wives and daughters of the American farmers, whom one would be apt to see upon a station platform in an agricultural region, either of New England or of the West, whether in fact, or in what their author, I believe, calls the "veritisms" of Mr. Hamlin Garland. One recalls some such weary and dejected group, or rather series, of scattered and silent women waiting for their train, as he looks out at these countrywomen, forgathering with their neighbors, and pouring forth a ceaseless flow of lively chatter, quite ignoring the strangers who in America would keep them silent. It is not at all that they are talking for the benefit of the stranger. It is only that, according to that happy barbarism of Lowell's, they are

> By throngs of strangers undisprivacied.

Signs are not wanting that the conditions of life are even harder here than on the hill farms of New England, or the prairie farms of the Middle West. But it seems as plain that its asperities are mitigated by the pressure of the social obligation to take it as pleasantly as may be. Some of its hardness the passing tourist cannot help but apprehend. It is plain that it is not a joyous task to wring a living from one of these patches that with us would be scarcely too large for a kitchen garden. And at this station, the sight of a slouchy stripling, in the misfitting uniform and baggy red pantaloons of the French infantry, being embraced and cried over by the peasant mother who has come to see him off, needs no interpreter.

Doubtless, these good people are, in ways, more provincial than the American farmers' wives with whom yet they surely would not change lots. It was not in Normandy, but weeks afterwards in Touraine, that my companion came upon two Tourangelles and

a Tourangeau clamorously insisting to the station master upon their right, in consideration of three third class tickets, to take the cow along free of charge. It was not in Normandy, but it might have been, and it could not have been in Connecticut or Illinois.

It was at Coutances that two travelers, breakfastless since dawn, came upon another of the things that, according to the most famous of sentimental journeyers, "they order better in France." For here they could buy for three francs a "panier á provision," which contained enough, of excellent quality, for both:—half a fowl; a mutton chop; *item*, a slice of fresh Camembert; *item*, a pint of claret, not so good as the cider that is to be had so cheap all over Normandy; *item*, a pint of water wherewith to mitigate its asperities; *item*, a glass and paper napkins. Abundant time in which to consume this repast, for MM. the travelers are merely begged to leave the basket at any station when they have done with it. One finds also at the station good peaches at not far from New York prices. Mr. Dearmer, the latest of sentimental journeyers, paraphrases Sterne by saying that, in France in general one is "treated twice as well as in England, and charged half as much." We were presently to verify this. But meanwhile, how could we help instituting a comparison between what happened to us here and what would have happened in our own beloved land, if on a way train in a rural part we had thrown ourselves on the uncovenanted culinary mercies of the country? The contrast is upon an essential point of civilization. It is not flattering, and the American cannot fully restore his national self-esteem by dwelling, as the British tourist is fain to do, upon less mentionable matters which they order better in England.

As the train rolls on through the sweet and cheerful Norman country, one perceives that the exception of "the building," taken by our British companions, is a very large one. To begin with, the South of England is brick built, and West Normandy is stone built. But this difference of material is hardly more striking than the difference in the quality of the building. Ruskin, fresh from France, broke out in the "Seven Lamps" in quite pardonable indignation over the contrast: "What a strange sense of formalized deformity, of shriveled precision, of starved accuracy, of minute misanthropy have we, as we leave even the rude streets of Picardy for the market towns of Kent." The cabins of the peasantry are, here as massive as they are rough, the most straightforward and enduring supply of the practical requirements, mostly of solid stone, among the older altogether, but having the same character of rugged simplicity in the modern instances, in which plaster is rough cast over a backing of invisible rubble or rough brickwork, with roofs of thatch or tile, crowned at the ridge with a

half-round drain-tile. Even the few still later houses of exposed red brick have nothing incongruous, and keep themselves in countenance by dint of mere unpretending simplicity, while the massiveness of wall and roughness of roof and deep reveals of plain openings give them a literal picturesqueness, or attractiveness to the sketcher. And at every hamlet rises above them the gray Norman church, so plain that one cannot commonly guess its date within centuries as one sees it from the car window, the "crossing" commonly denoted by a saddle backed tower. Mr. Freeman might have learned, in the Normandy upon which he was the chief authority, that doctrine of the unity of history upon which he so strenuously insisted. Nowhere else is it more visibly impressed upon the traveler than in the buildings that bridge a decade of centuries, from the churches that were here before William of Normandy sailed for England, to the cabin or the station of last year. Here, more than elsewhere, it is continually borne in upon us, the art of architecture has never ceased to be vernacular. More than elsewhere, even in France, for we have scarcely seen an example of that academic and artificial modern French architecture of the schools, of the great Paris school, that in most parts of France competes with the vernacular building that is the artistic development of handicraft, and in which good sense is carried to the point of that fine sense which we call "good taste." Here, at Coutances, even the bulbous cupola of the Italianized tower of the church that confronts the cathedral, takes on an indigenous and home-grown air, while the spires of the great minster itself impress one with the truth that this old work is all of a piece, from cabin to castle and cathedral. Ruskin we find with pleasure, has been beforehand with us in this observation. Of this very spire of Coutances he emphasizes "the complete *domesticity* of the work; the evident treatment of the church spire as a magnified house roof."

The "public works" are worthy of the houses and the churches. The highways, as straight and level as the surface admits, are wide and white and clean. The stone bridges, which are much in the majority, are as vernacular, and of as indeterminate an antiquity, as the cabins or the village churches. Of the bridges of metal which are given over to the modern engineer, to whom all bridges are intrusted at home, there is no more to be said in praise than of ours—not so much, indeed, for they are not so scientifically attenuated according to the nature of their material, and so exchange for heaviness and clumsiness the aspect of lightness which an engineer who was an artist, as well as a scientist, would know how to raise to grace.

The Gothic of Normandy is almost unfailingly as happily placed

as wrought. As we pull out of Coutances, we look back to "a city set on a hill." And presently we come to Avranches, a city even more conspicuously and picturesquely perched, climbing the slope and bristling along the ridge, "piled deep and massy, close and high," like another and more famous "romantic town." Beyond Avranches, the country again declines, for the few miles that are left to Pontorson, to the gentler undulations that we have been watching all the morning, the quiet rural landscape, striped with vari-colored crops, ripening to the literal sickle, interspersed with fringes of woodland, punctuated with commas of gray cabins, semicolons of village churches or of "manoirs" that sometimes approach the proportions and the pretensions of chateaux; and we comprehend and approve the vogue in his native province of the song of the Norman poet, Frédéric Bérat:—

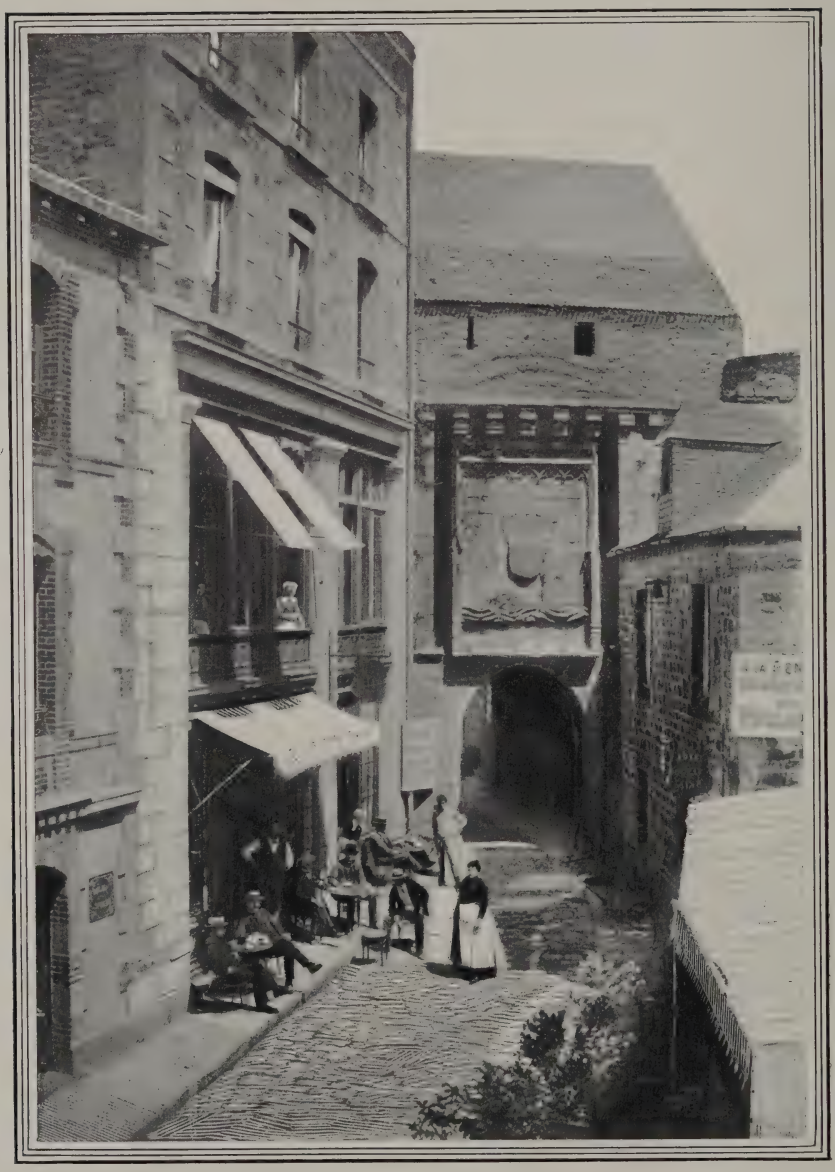
J'ai vu les champs de l'Helvetie,
Et ses châlets et ses glaciers;
J'ai vu le ciel de l'Italie,
Et Vénise et ses gondoliers.
En saluant chaque patrie,
Je me disais: "Aucun séjour
N'est plus beau que ma Normandie;
C'est le pays qui m'a donné le jour."

Pontorson is only the station for the Mount five miles away. In Roman times, they say, there was firm land, and roads all the way. But the sea broke its way in and gradually islanded the Mount, so that it was accessible only at certain stages of the tide, and to the ignorant or unwary the transit was a danger, as readers of French fiction have been often reminded. It was only in 1880 that the existing road was made which gives a safe access at all times. If we had a Mont Saint Michel at home (which is absurd), we should, undoubtedly, have a trolley line running to it (which would be still more absurd). Want of enterprise, or a sense of the fitness of things, which, in some cases appears to be a synonym for the same, has restrained the public conveyances to lumbering omnibuses drawn each by three of the fat and comfortable, but not swift Percherons, so that the passage is a matter of an hour. But who would grudge the time? The level road leads between strings of cabins whose inhabitants seem to eke out a precarious livelihood by selling drink to each other, for quite every other cabin advertises itself as a "Débit de boissons." Half-way or so there is a burying ground in which the national obligation to be gay is seen to be stronger than death. With its light iron crosses and monuments, all garlanded with immortelles, the aspect of this graveyard is not only cheerful, but almost "chipper," distinctly more so than the gray, solid and sombre habitations of the living.

There are huge heaps of sand along the road at intervals, waiting, presumably, to be converted into merchantable cement, and further out flourishing crops on either hand attest that there is enough earth mixed with the sand of the lands reclaimed from the sea, to nourish them, under the minute husbandry of the Norman peasant, whose clumsy, two-wheeled carts stand about or move, drawn by one, two, three and even four big horses tandem.

The first glimpse of the Mount is attended with difficulties to the "insides" of an omnibus. In my case it was complicated with the feet of the British bride, who had wisely chosen the box seat, and between whose dangling boots, which fell, or rose, some inches short of the foot board, I caught my first view of the bristling pyramid that crowns the rock. [I hasten to add that they were very neat boots—for an Englishwoman's). Only a few moments more and we come to the one practicable aperture in the circuit of the old towered walls that enclose the abbey fortress and its dependent hamlet, where they are not as effectually defended by the natural scarp of the cliffs themselves. A sharp turn to the left between the hooded barbicans, another to the right inside, a few steps straight on, and one finds himself confronting a very old gateway, crowned with an escutcheon, that gives entrance to the single street that climbs the cliff and encircles the castle, and landed upon the sidewalk of a very modern inn. He is "chez Poulard Ainé."

I was about to write that he finds himself in the arms of Madame. For of the warn welcomes that the traveler finds in the Norman inns, the warmest is that Madame Poulard Ainé. You, you are made to feel at once, are the guest she has been waiting for all these years. The pleasure of receiving you is her final purpose in keeping an hotel. The American traveler shudderingly recalls the kind of reception he has experienced, and would be likely to experience at a like establishment in the provincial parts of his own land. He is moved to desire that some benevolent plutocrat would organize an excursion to Normandy of New England tavern keepers, who need the experience so immensely more than the school teachers who are so much apter to get it, that they might take some lessons in the rudiments of their calling and of social civilization. They might find Madame "insincere." In the first place, it seems quite out of the question that so much "bonnefemmie" can exist without a basis of genuine human kindness. In the next, it is none of their or our business whether she is or not, when she is exerting herself for the pleasure of her inmates, who are made to feel that they are her guests. Dear brethren—and sisters, more especially in the country tavern-keeping line, how much we have to learn!



THE PORTE DU ROI.

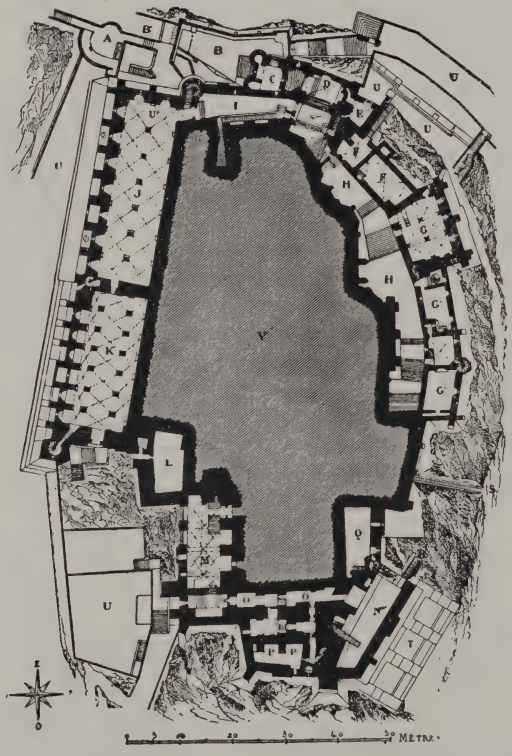
This illustration shows the "business quarter" of the village of Mont St. Michel, and is what the visitor first sees on coming within the walls. The Porte du Roi is opposite, which is the entrance to the single street which climbs and skirts the rock on its Eastern side, and from which access is gained to the castle through the Chatelet. The modern building at the left with awnings is the original Hotel Poulard, and Madame Poulard is seen at the center. The Porte du Roi is the inner gate of the defences, and belongs to the fortifications erected early in the fifteenth century.



SOUTHERN VIEW FROM THE DIKE.

The dike, or embanked road in the foreground, continues across the marshes to Pontorson. It is a government work, finished in 1881. Before that the passage across the sands was unsafe at some stages of the tide. The construction of the dike was the preliminary step to a reclamation of the marshes for agriculture, which has already come near to compensating, by the crops raised upon the made land, the cost of the improvement. The distance across the sands, which was exposed until before the construction of the dike, is about a mile.

It would be the merest affectation to ignore the name of Poulard in writing about Mount St. Michel. There is not only a Poulard (Madame elicited him from his ranges and saucepans, when we expressed doubts of his actual existence, and proudly and merrily introduced us to a handsome, beaming person of her own early middle years). There are other and rival Poulards, whom Madame declares not to be properly Poulards at all, a Poulard

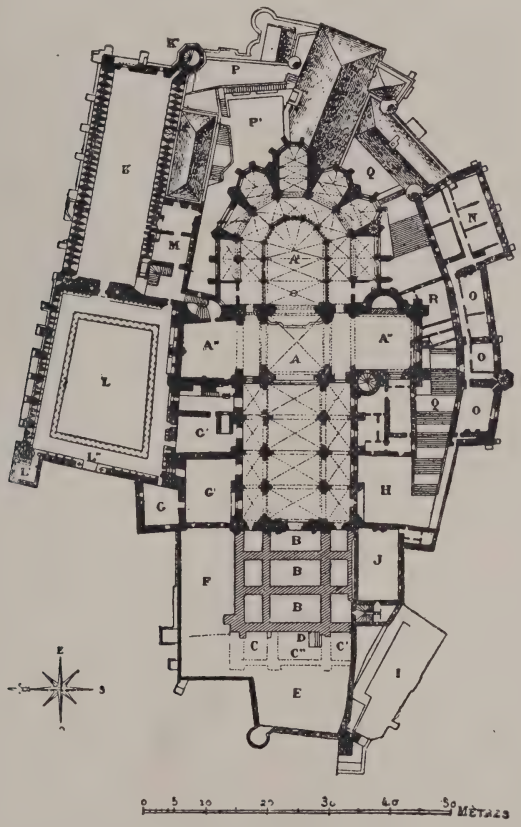


MONT ST. MICHEL. PLAN AT THE LEVEL OF THE GUARD ROOM, ALMONRY AND CELLAR.

Key to plan: A, tour Claudine; B B B, ramparts; C, chatelet; D, guard room; F F, steward's lodging and bailey, or outer court; G G G, abbot's lodging and abbatial buildings; H, courtyard and great stairway; I, courtyard of the Merveille; J, almonry; K, cellar; L, former abbatial buildings; M, crypt known as "Galerie d'Aquilon" (of the North Wind); N, hostelry; O O, passages connecting abbey with hostelry; P P, prison and dungeon; U, garden, terraces and covered way; V, body of rock.

Jeune, a Veuve Poulard, and the rivalry is the chief contemporaneous human interest of the Mount. Solemn warnings stare at you from coigns of vantage on the cliffs, not to confound the Poulard, "At the Renown of the Omelette" with other establishments bearing the same name. The widow and the junior have their agents out to decoy you from the elder line and the path of virtue. What happens to you if you yield to their blandishments

I neither know nor care, knowing how well you are rewarded if you resist, and obtain lodgings in any one of the three houses into which the original humble auberge has expanded. The chambers are comfortable, the table d'hote excellent, the omelette worthy of its renown, the "addition" to an American absurd in its moderation. One finds himself extremely well chez Poulard ainé (not on any account jeune or veuve).



MONT ST. MICHEL. PLAN AT THE LEVEL OF THE UPPER CHURCH, THE CLOISTERS, AND THE DORMITORY.

Key to plan: A, A, A, church, choir and transepts; B, B, B, first three bay of nave, destroyed in 1776; C, C, C, towers and porch; E, former terrace; F, former chapter house; G, G, former cloistral buildings, dormitories; H, platform; I, ruin of hostelry; J, infirmary; K, dormitories of the Merveille; L, L, cloisters; M, vestry; N, abbot's lodgings; O, O, O, guest chambers; P, P, courtyard and terrace; Q, courtyard of apse and great staircase.

But after all, even Poulard ainé is an incidental and secondary attraction to one of the wonders of the world. As a Christian hermitage the Rock has a fairly authentic history of a millennium and a third, from the time, in the seventh century, when the Bishop of Avranches, posthumously promoted to be St. Aubert, began to resort to it for meditation. But it was not till early in the



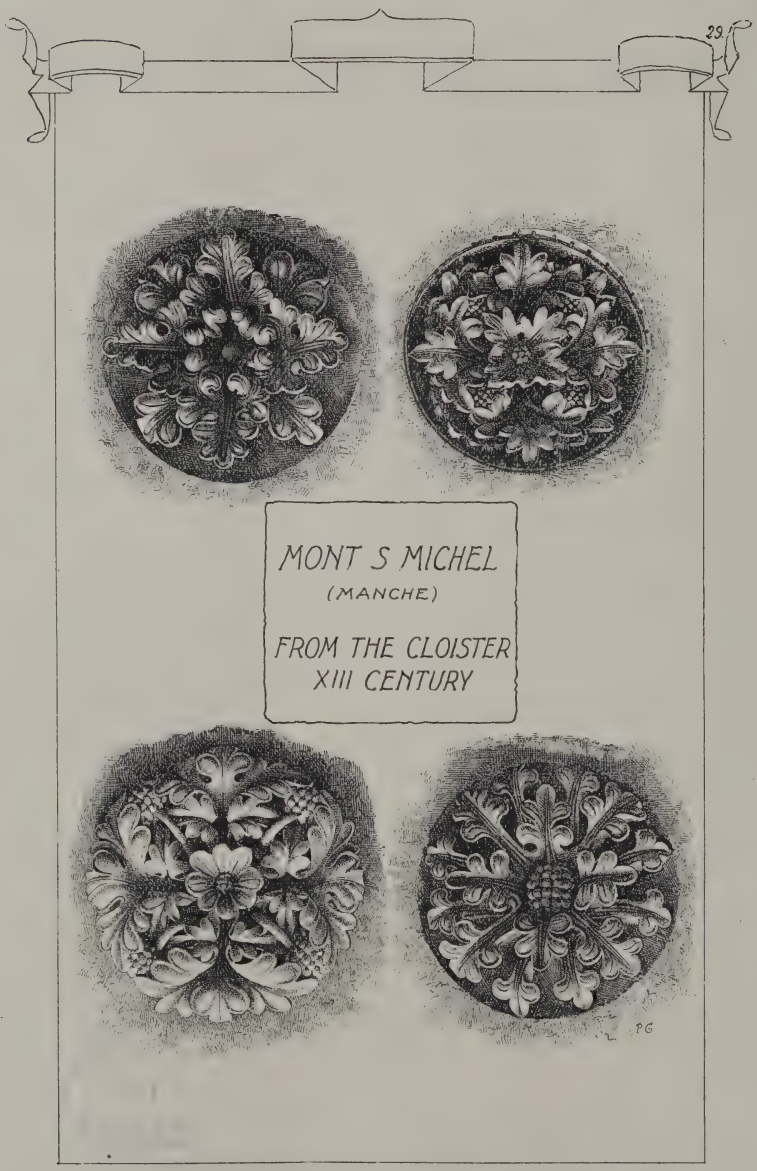
EASTERN VIEW.

This is the best general view of the fortifications. They do not extend completely around the rock, which, to seaward, is equally fortified by nature through the sheer rise of its sides. The tall and long wall near the summit in the Southern view is the flank of the "Merveille," of which the East end is seen in this. This was the conventual building proper, the residence of the monks and of the Knights of the Order of St. Michel, founded by Louis XI. in 1469, though the building itself, 246 feet long by 108 high, dates from the thirteenth century.

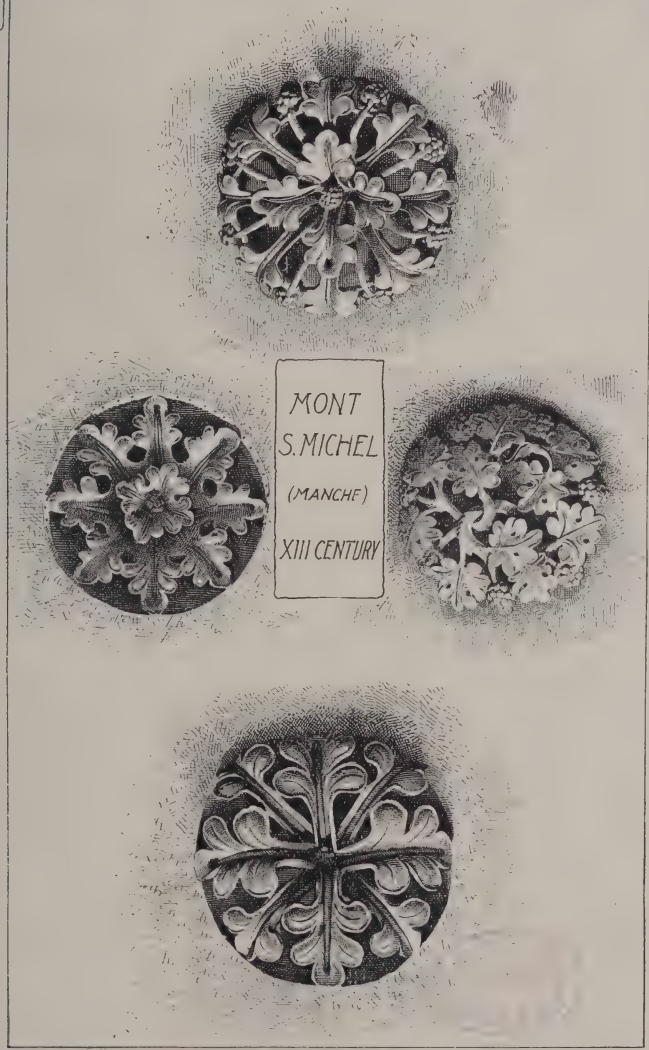


LOOKING WEST, FROM THE RAMPARTS.

The illustration gives one of the most impressive views of the general architecture of the Rock. The building, it will be seen, is in three tiers, the first being the lower side of the single street of the village, the second the upper side of the same, while the third consists of the abbey itself and its dependencies. The street winds as well as rises. The domestic building is of all ages, from the thirteenth century to the nineteenth, but, being almost all of massive granite, even the oldest is in good preservation.


29.
MONT S MICHEL
(MANCHE)
FROM THE CLOISTER
XIII CENTURY
PG

28.



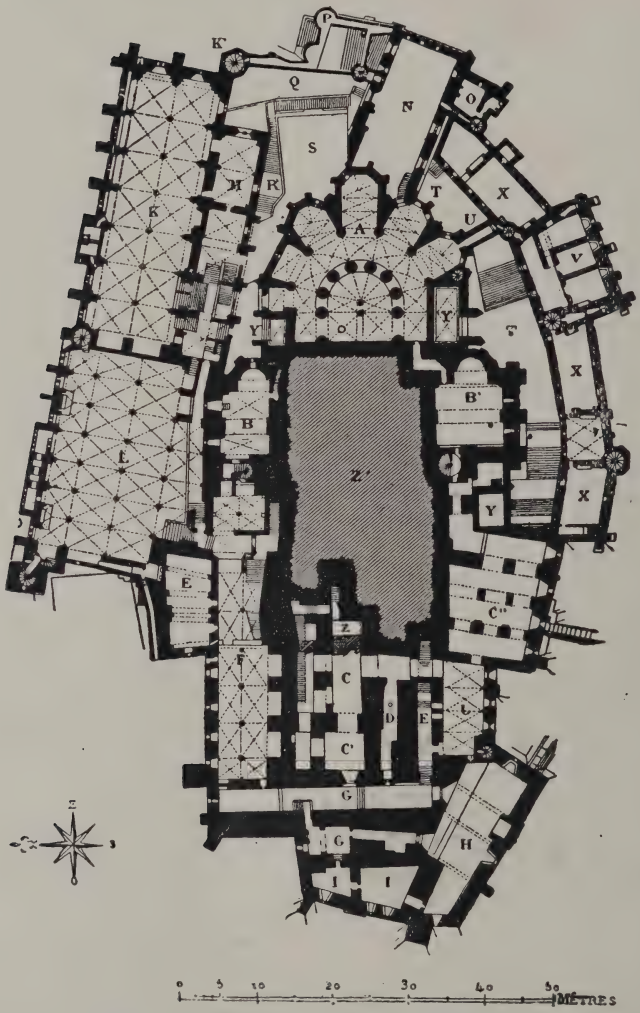
eleventh century, half a century before Duke William sailed for England, that Abbot Hildebert conceived the great design of establishing a platform at the summit, and building above it with its own material and granite from the nearest coast, literally, to recur to our Ruskin, "raising into ordered spires the wild rocks of the Norman sea." The Benedictines believed in work, as well as in poverty, chastity and obedience, and it was by monastic labor that the first foundations were spread. Thenceforward, for five centuries, building went on. Part of the existing nave is of the eleventh century, the whole "Merveille," the austere gabled pile on the northeast of the Mount, with its almonry, refectory, dormitory, cloisters, of the early thirteenth; the Châtelet and most of the fortifications of the fourteenth, the choir of the fifteenth. Thus, on these few acres, is spread the magnificent epitome of French Gothic architecture, ecclesiastical, military and domestic. The epitome was finished, as Mr. Dearmer remarks, only just in time, for the last touches were given to the choir in 1518, and in 1520 the royal builder who Italianized everything he touched and who touched so much, Francis I., visited the Mount. He left no traces, happily for us. But there is an odd incongruous piece of eighteenth century classic, in the front of the abbey church, a double "order," after the fashion of that time. The innovation has itself become an antiquity, as weather-worn and lichened as the far older work it adjoins. It is to be hoped the restorers will abandon their reported purpose of removing the anomaly and restoring the nave to its pristine proportions; for the anomaly is part of the "res gestae."

All this is no more to be studied and apprehended in a day than it was built in a day. A fortnight on the spot would be needed to "get it." All that one can arrive at in one climb and ramble is the conviction of the little maid who serves you with appropriate Benedictine, on your way down by the ramparts, that it is "bien compliqué." For the real study of it one must resort, unless he has time and ability to do the work all over by himself, to the latest and best authority on the Mount, the exhaustive and profusely illustrated volume of M. Paul Gout, which leaves no historical or architectural point untouched, and which has the advantage of showing that a Frenchman may wear a great weight of learing lightly, and does not necessarily become illegible, even when he knows a great deal. Or one may resort to the more compendious elucidation in Sir Walter Armstrong's English edition of M. Corroyer's "Gothic Architecture" in which the Mount is taken as the type of a mediaeval abbey fortress, in M. Corroyer's words, "the grandest example of combined religious and military architecture of the finest mediaeval period."



THE SALLE DES CHEVALIERS.

As may be made out from the ground plans, the Merveille really consists of two buildings, being divided, midway of its length, through all three stories. The lower stage is divided between the cellar and the almonry, the second between the Salle des Chevaliers (Knights' Hall), and the Salle des Hotes, which was the refectory and dormitory of the monks. The most elaborate and beautiful of all these is the Knights' Hall, in early but still completely developed Gothic. It has no outside roof, the floor of the cloister resting directly on its vaulting.



PLAN AT THE LEVEL OF THE LOWER CHURCH, REFECTORY AND KNIGHTS' HALL.

Key to plan: A, lower church; B B, chapels under transepts; C C C, substructure of Romanesque nave, monks' burying ground and base of South platform; D, old cistern; E, old cloistral buildings and refectory; F, old ambulatory; G, H, I, passage, hostelry and offices; K, K, L, M, refectory and Knights' Hall; N, officers' quarters; P, chatelet; Q, courtyard of the Mehveille; R, S, staircase and terrace; T, courtyard of church; V, X, abbot's lodgings and guest chambers; Y, Y, cisterns; Z, body of rock.

How the impression of the energy and perseverance as well as of the skill of the old Benedictines deepens upon you as you climb the flights of more than a thousand steps, cut out of the native rock, and "worn by the feet that now are silent" which lead from the lowest level of the single street to the uppermost terrace. The cincture of fortifications that girdles the rock and encloses the buildings is later than most of them, a modern erection

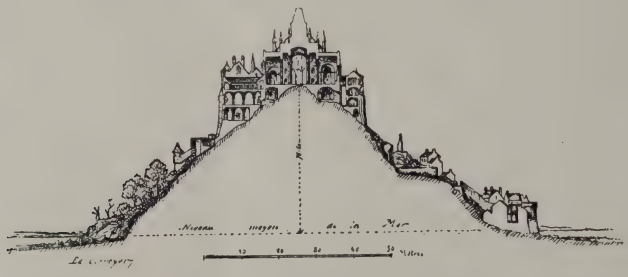


THE CLOISTER.

The floor of the cloister is the roof of the Western half of the Merveille. The arcades between the ambulatory and the court are double, the springing of the arch in one row corresponding with the point of the next, with space between the rows for an exquisite groined vault. The shafts are of granite, but in the superstructure Caen stone is used. It is the only exception in the whole pile to the use of granite, and tempts to a freedom and fantasy of design corresponding with the facility of the material. It is instructive to compare the treatment of the arcades with that of the enclosing walls of granite.

of the fourteenth and fifteenth centuries. With incredible labor the abbot and his monks and soldiers reared these massive defences just as gunpowder was about to supersede them. The place was never in fact taken in any of the many attempts upon it by force or treachery. It must have been impregnable, between the defences of nature and of art, before artillery, and, as my companion observes: "It still looks proof against sneak thieves." And how grim is the aspect of the strong places! One look into the darkness of the kennels that in their time have served as dungeons for some of the greatest men in France is quite enough for the modern observer, who would not house his enemy's dog in one of them. As the late Thomas Carlyle would gleefully have remarked on inspecting them: "Those were earnest times."

The hapless prisoners thus lodged were let out to haul up the supplies for the abbey from the base of the Mount by the steeply inclined plane that is still shown you. But the pile is not all dungeons and defences. The refectory and the Hall of the Knights



ABBEY OF MONT ST. MICHEL.
Transverse section from north to south.

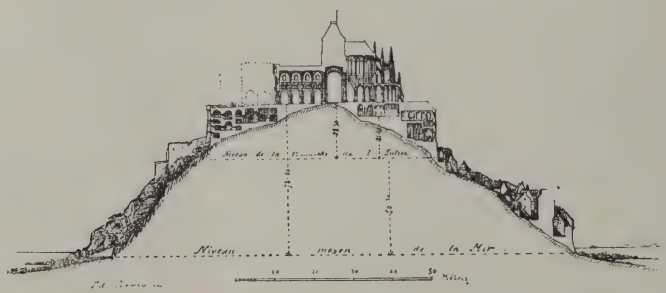
still give the notion of barbaric geniality and rude good cheer, and the cloistered terrace of air and exercise, if not of "out door sports." Alone of all the work the cloister is built in freestone, and the unfailing good sense of the monkish builders is seen in the higher ornateness which is given to its capitals and spandrils than to the more intractable granite. Rich as are, for example, the crocketed flying buttresses of the choir, the richness has been stopped distinctly short of the elaboration to which the ornamentation of the cloisters has been carried, while the intractability finds its compensation in duration. Whereas the soft stone has had to be restored conjecturally, and has in consequence the perfunctory and lifeless air that belongs to all modern work in comparison with mediaeval, the detail of the weather-worn and lichened granite is distinct enough to afford copies in which the modern workman cannot err, nor restorer go wrong. The Franch official restoration has been done with perfect knowledge and dis-



INTERIOR OF THE CHURCH.

The nave of the abbey church, of which the western bays have fallen or been demolished, and which is fronted with a mask of eighteenth century classic, is itself an excellent specimen of the twelfth century Romanesque of Normandy. A good part of it, indeed, is of the eleventh century, but it is in as fully developed a style as the later churches of the province, showing the arrangement of nave, arcade, triforium and clerestory in perfection, and also the intention of covering the nave with a vault even before the builders had skill or courage to undertake the actual vaulting.

cretion, the chief exception being the roofing of the cloisters in black and orange tiles of garish newness, which have the air of a votive offering from a brewer of the wildest American West. It was a happy thought to crown the edifice with an unfeignedly modern flèche, in the form of M. Fremiet's "St. Michel." Although in place, four hundred feet and more above sea-level, this tells only as a shapeless splash of silhouette against the sky, and from any accessible point of view only as a poised, aspiring shape, yet, close at hand, one sees it to be a work which the monkish builders at once could not have produced and would have been glad to have reproduced if they had known how. Some such vindication of our generation was sorely needed to keep the modern visitor in countenance among so much that is the despair of modern artists, the faithful, skilful and beautiful elucidation of the structural facts which is the design; the faithful, skilful and beautiful execution of the design which is the workmanship. One can not fail to



ABBEY OF MONT ST. MICHEL.
Longitudinal section from west to east.

see at every turn that the monkish builders had found the secret of life in that deep and thorough enjoyment of their work, which was the secret of the best that life had to offer in the fourteenth century, as it is at the beginning of the twentieth and, in the handicrafts at least, it is the moderns who suffer in the comparison. In these, the world's work is not so interesting to the workmen, and so not to beholders, as it was then.

But even this "mediaeval miracle" cannot hold our attention as we emerge upon the topmost terraces into the open air of the July afternoon from our weary scaling of its outworks and dungeons and halls and cloisters and shrines. Look out upon the prospect; look round upon the "circumspect." Close under us, to landward, drops the cliff, and half way down yawns the fissure of the single circling street between the rock and the ramparts, lined with the quaint old houses, standing free on the outer edge, and on the inner plastered against the face of the native rock which even crops



THE APSE.

The choir of the old abbey church fell in in 1421, while the English, from the mainland, were still threatening the Mount. When peace came, after a hundred years, in 1453, the Cardinal-Abbot D'estoteville laid, in the Crypt of the Great Pillars, the foundations of the new choir, which was steadily continued under his successors, until the completion in 1520. The choir is thus the swan-song of French Gothic. Francis I. visited the Mount in 1518. The detail attracts the attention of most visitors, but M. Paul Gout is quite in the right in saying that the real glory of the choir lies in the "powerful grasp and the expressive clearness of the general conception."

out untrimmed in the chancel of the little parish church, while every level the size of a parlor that accrues along the slopes is a blooming garden.

Beyond the base stretches away eastward the sandy line of the dike by which we came from Pontorson, the horses along its surface dwindled, from our eminence, to flies. To the north the great bay, bounded by a line of faint blue bluffs, the sands covered by the incoming tide and the varying depth marked by the interchange of colors on the surface where "The shoaling blue plays into green," a wonderful iridescence of emeralds and turquoises. Straight out to sea, the cliff drops almost sheer, even better defended by nature than to landward by man's art, and its rocky sides half clothed with shaggy trees, hanging on for dear life, like the hanging habitations on the other face. And straight away southwestward, the declining sun marks a shining street along the sea:—

Splendet tremulo sub lumine pontus.

At the end of that shining trail is New York, only a week away by the almanac, a thousand years by the impressions of this so crowded day. And we fervently agree that it is good for us to be here, and that, if we had to take another steamer back to-morrow morning, we should have been richly overpaid for coming.

Montgomery Schuyler.

Note.—The plans and sections given in the text are from Corroyer's "Gothic Architecture," published by Macmillan & Co.

THE ARCHITECTURAL DESIGN AS IT IS IN FRANCE.

HOW do we manage matters in France? I will tell you how a Frenchman sees it, although I may speak of much well known to many. The ideal architect, now as ever, should be both the scholar and artist. He should possess very varied knowledge. He should know the theory of all arts and all sciences, which have anything to do with architecture. With this he should combine taste, the fine judgment and the genius of his art. Knowledge of history, of literature, geometry, mechanics, perspective and physics is necessary. But something which is absolutely indispensable is a thorough knowledge of design; for, after all, the entire art of the architect manifests itself in design.

When an architect is consulted with regard to a work of architecture, he should be able on the spot to design mentally one or even several projects of the structure in question, in accordance with the intentions of the person who wishes to build. This mental design makes it possible for him to propose at once to the owner one or several types of structure for the proposed building. When the first general understanding has been arrived at, the architect makes a sketch, a rough tracing with the pen, indicating only the ensemble and the principal divisions, serving as a basis for the execution of the real design or the final project. The architect should be able with his sketch to give an approximate estimate of the expense, based on the cost price per metre (or foot) of surface and per floor for a structure of the character ordered.

When client and architect agree on the ensemble of the structure and its essential points, the architect starts on the execution of his project. He first draws his design with pencil and on a reduced scale. The simplest and most commonly used scale is one decimetre or two decimetres, on which one or several of the divisions as units of length are taken. If it is understood that 1 centimetre, 2 centimetres, 5 centimetres represent 1 metre measured on the ground, we say that the design executed is on the scale of $0^{m},01$, of $0^{m},02$, of $0^{m},005$ per metre. The custom in France is, to draw the plans at 2 centimetres per metre. The design, first executed with pencil, as we said above, is drawn in ink with ruler and pen, following the lines traced with pencil, which after this second operation are erased. The interrupted lines (— - — - — - — - —) represent axes, as *e. g.*, the axes of the walls; the dotted lines (.....) indicate the concealed lines and outlines. The connecting lines for the sides are likewise dotted; but on the plans painted with indian-ink, they are often entered with red ink.

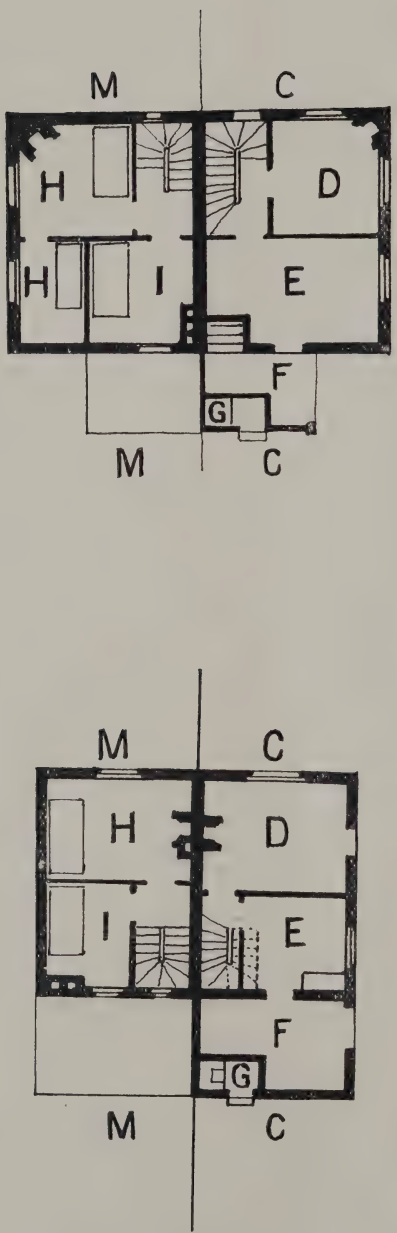


FIG. 1.

To express the design, the architect must represent in form of a plan, a profile and an elevation, the building which is to be erected.

The plan gives the fundamental conception of the building. It is, in fact, on the composition of this plan, that the first merit of a work of architecture depends: the usefulness, I mean, of the building modeled upon the needs and convenience of its inhabitants. The skill of the architect consists in combining the convenience of the interior connections, of the necessary exits, with a regularity which is always desirable; but to this regularity, to symmetry, to the uniform correspondence between all the parts of a plan, he must not sacrifice everything else; above all it is necessary that the general and special arrangement agrees with the needs and the use of the building. The composition of the plan of a building requires also the choice of the general idea, on which the form of the building, its special physiognomy, its character must depend. The elevation depends also on the plan. If the latter is simple, the structure overground will at once show a certain stamp of simplicity.

If the plan in the design of a building must above all correspond to, and satisfy, the idea of convenience, we may on the other hand say that the elevation alone is directly responsible for its beauty. To express this the architect makes use of geometrical and perspective drawings.

When the architect has designed the building to be erected in



FIG. 2. APARTMENT HOUSE ON THE CORNER OF CHAMPS ELYSÉES AND RUE DE BERRI.

plan, in profile and in elevation, he has to proceed to the representation of the secondary parts of the architectural ensemble, to the representation of the various ornaments which are to form the decoration of the building. These details, these portions of the architectural arrangement must be represented either on a large scale or full size, so that their different parts may be clearly understood. Together with these different designs, the architect must furnish estimates and specifications. The part embracing the statement of the work is called "devis descriptif" the part concerning the cost of each detail of work is the "devis estimatif." The "devis" must show in a precise manner the projected building,

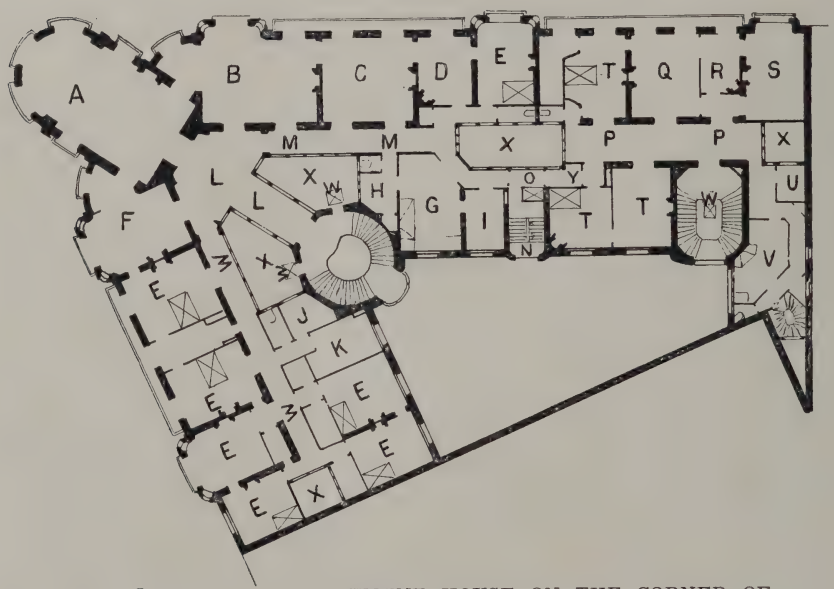


FIG. 3. PLAN OF APARTMENT HOUSE ON THE CORNER OF CHAMPS ELYSÉES AND RUE DE BERRI.

in its ensemble and in its parts; it must give the conditions, requirements and processes best fitted to insure a perfect execution; indicate the nature of the materials to be used, the quality of these materials, the troubles which the same may cause and which must be avoided. Of course, the forms and dimensions of the rooms, their arrangement and ornamentation are exactly fixed by the designs representing the plans, profiles, elevations, and the details on large scale, which form the ensemble of the project. Nevertheless, the architect will describe in his "devis" the arrangement, the decoration of each of these parts. A methodical classification is necessary in the making up of a "devis," so as to avoid the confusion which may result from the great quantity of subjects treated. We

usually allow for the subject matters a certain number of principal divisions, with headings as follows: Earthwork and Excavation, Foundations, Masonry, Carpentry, Roofing, Joiners' Work, Glaziers' Work. Under each of these chapters we bring together the material, workmanship, transportation, etc., etc., for each class of work. In spite of all attention paid to the drawing up of a "devis" in the description of the work as well as in the estimate of prices, certain errors may be committed, which will cause a variation in the amount agreed upon for the finished work; on



FIG. 4. STAIRWAY OF APARTMENT HOUSE ON CHAMPS ELYSÉES.

the other side, the owner may require some changes in the course of the execution. To avoid this, in order not to be bound irrevocably, we often suppress the "devis estimatif" and retain only the "devis descriptif," after the owner and the builder are sufficiently posted regarding the cost. On the whole, in France, the work of the architect consists in furnishing the project, involving a more or less large number of designs, and the "devis." Having done so, he is responsible only for damage caused by some faulty design or specification of his.

We said above that on the composition of the plan must depend,

not only the form of the building, but also its special physiognomy —its character. The architect must therefore apply to the composition of the plan all his science, all his intelligence and all his talent. Of course, an ideal architect would have to *invent* this plan, take it entirely from his own brains. Such an ideal architect would not have recourse to any work, he would even avoid thinking of a plan previously executed, because that could only interfere with his creative ideas, or at least influence them. But besides possessing very extraordinary knowledge, such an architect would have to be a man of remarkable genius. In France—as, no doubt, elsewhere—architects of genius are rare. Some have thought they were, and—were much mistaken. The greater part of those who have relied chiefly on their own imagination, only did something



FIG. 5. PLAN OF DWELLING OF CARAN D'ACHE.

M. Grandpierre, Architect.

beyond their power, and failed. As a general rule, therefore, a sensible and prudent architect will take care not to try to *invent* too much. No doubt, it will not be necessary for him, if he knows his business well (I say "well"), to have recourse to books on architecture; that is if he knows by heart the characteristic work of his predecessors, the common points where all masters have met, the best relations between given forms, the proportions best fitted to the special character of every sort of arrangement, the details of ornament agreed upon by the most celebrated artists. No, I repeat it, a good architect need not consult any work on architecture, because, no matter what problem may be before him, he will at once *see* in his mind's eye a standard plan of this building. I mean to say, the disposition and the distribution proper



FIG. 6. FACADE OF DWELLING OF CARAN D'ACHE, THE WELL-KNOWN CARICATURIST.

M. Grandpierre, Architect.

for this building, the best order and the best arrangement so far given to such and such details and to its ensemble. If, by chance, the architect should not have the standard plan in question present in his mind, he should, of course, be advised to look it up, either in technical books or in the works of his fellow architects. I may say that there are standard plans for all kinds of structures, from the standard plan of the laborer's dwelling to the standard



FIG. 7. PRIVATE RESIDENCE. M. Parent, Architect.
(See Fig. 8.)

plan of the church, from the standard plan of the theatre to the standard plan of the hospital; and we may lay it down as a principle that the architect, before composing the plan of his building, must know the standard plan of that kind of building, and must not let it pass out of sight—unless he is a man of genius. Of course, he must not copy it, that would be too simple; besides, it might be that the standard plan would not answer sufficiently well the particular taste and wishes of his client. What is necessary is

that the architect, although inspired by the standard plan in its essential lines, should follow the general ideas of his client, and add to the work yet ideas of his own. The amount of the latter will be greater or less, according to the kind and importance of the work, and also according to the power of his originality. In one word, there must be in the mind of the architect a sort of mysterious collaboration between the architect's own conceptions, the requirements of his customer and the standard plan. From this triple collaboration the composition of the plan of the building in question will originate.

In France we design usually first the plan of the ground floor and that of the second floor, then the plans of the other floors, last of all the plans of the basement and of the upper part of the building. Thereafter we execute usually two sections of the struc-

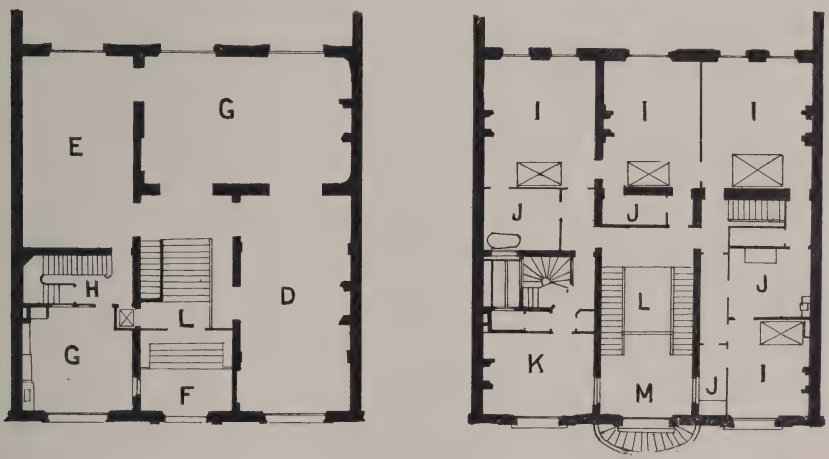
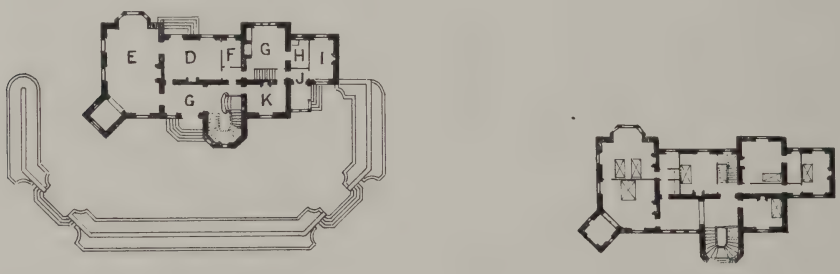


FIG. 8. PLANS OF GROUND FLOOR AND SECOND FLOOR.
(See Fig. 7.)

ture, the longitudinal section and the transverse section. Finally, we design the elevation of the front of the building. In this last composition the taste, the intelligence and the rhythmical sense of the architect find occasion to manifest themselves. But in these matters one must take care not to yield too much to fancy. Trying to be original, one may so easily become bizarre; excess in ornamentation is almost always worse than excess in soberness. Many of our French architects are skilful decorators. Some, tempted to show what they can do, exaggerate the importance of the ornament. A detail becomes too pretentious. People of taste shudder. How many new buildings are there, whose front are overloaded with incongruous motives! Within a few metres of height, these intemperate architects have piled everything imaginable in order to produce the useless. We see only reliefs

without motive; senseless balconies, one above another; columns on the balconies; brackets suspended anywhere. It looks as if the ornaments had broken loose from architecture. And yet, it must be observed, it has taken much talent to get it there. Taken singly, some of these motives are meritorious. The trouble is that they do not harmonize with the ensemble of the building, they do not even harmonize with themselves. Of course, we have to decorate the façade. Ornament is a complement of architecture, a necessary complement; the ornament gives to the general design its brilliancy and charm. The ornament of a building, no matter of what nature or of what importance, must not be the work of caprice; it must justify itself by declaring something of how the building is constructed, where its points of support, its anchorages, its chief floor, etc., etc., are. The ancient architects made great use of these elements. There lies the origin of the colonnades, the buttresses, simple and composite mouldings, the



A. B.

FIG. 9. PLAN OF GROUND FLOOR AND SECOND FLOOR OF CHATEAU DE LA CHATAIGNERAIE.

(See Fig. 10.)

dentils and modillions of the cornice, the lion's heads and dripstones, the acroteria of the roof, the railings and friezes of the façade, the corbelling-out brackets, the gargoyles of the terraces and the caryatids of the porticoes. All these motives have their reason in the structure of the building. At all epochs, the ornament, in obedience to the same laws of propriety and truth, proclaims on the outside the use, the destination of the building. A good architect will not lose sight of these eternal laws. Nor will he forgot them when designing the divers ornaments which are to embellish the interior of the building. In France, of all these parts, as well as of all detail of the outside decoration, the architect furnishes a special design, either on a large scale, or in full size. Whether these designs are washed with india-ink or drawn, is of little consequence.

A good architect can, of course, execute, arrange, decorate all kinds of private or public buildings. As a matter of course, however, a

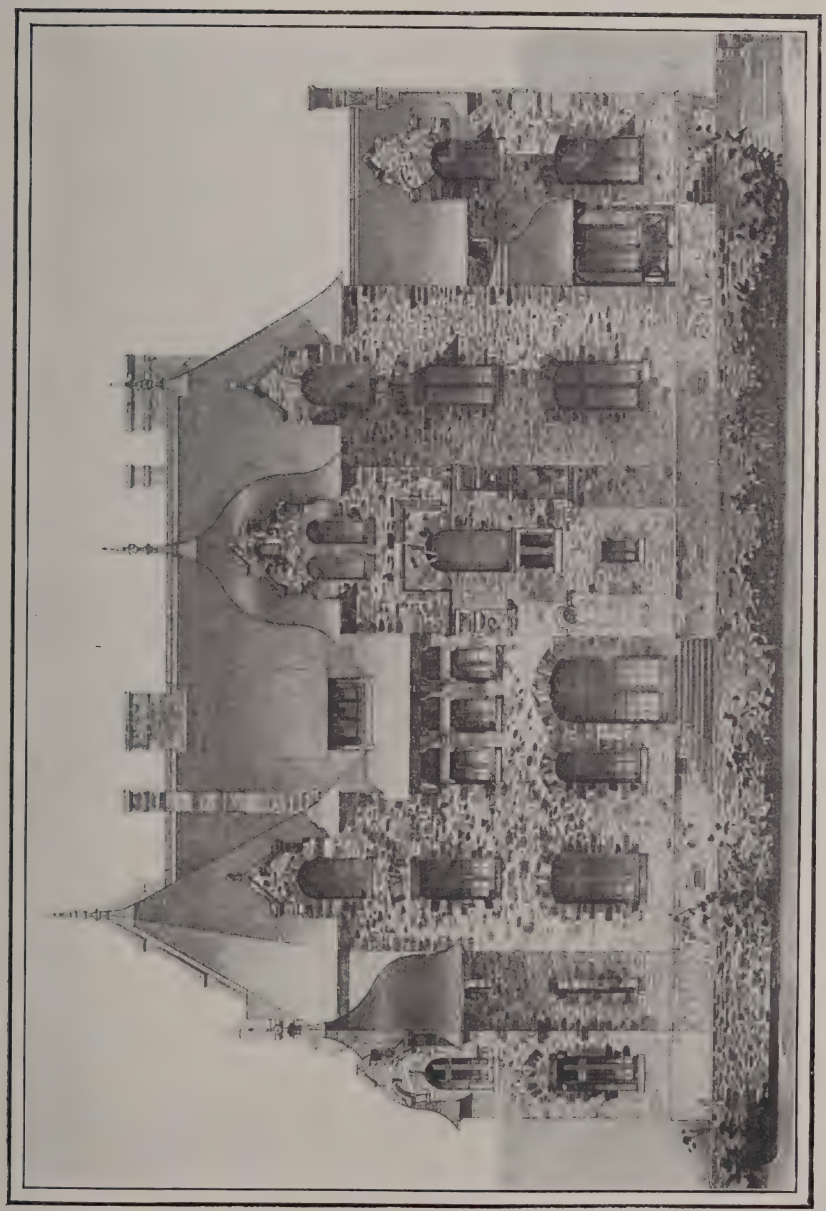


FIG. 10. CHATEAU DE LA CHATAIGNERAIE. M. Lucien Roy. Architect.
(See Fig. 9.)

good architect, a celebrated designer, will not give his talent and his time to the construction of buildings of no architectural importance and of quite elementary execution. We have in France, therefore, two categories of architects: those which busy themselves with humble, ordinary constructions, and those who devote themselves to the more important works. For the former, the knowledge of the "standard plan" is almost sufficient. Suppose, for instance, they have to erect a small house, cheap, intended for the lodging of a single family. It would be perfectly useless to trouble one's head how to compose the plan. For this little house, we require a cellar, a dining-room, a kitchen, a shed, water-closet, two sleeping rooms and an attic. Logically, the same plan will be found in almost every case. We may adopt plan A, or we



FIG. 11A. CHATEAU DE LA CHATAIGNERAIE. REAR FACADE.
M. Lucien Roy, Architect.

may choose plan B (Fig. 1), the type will be the same. Necessarily we shall have on the ground floor C C the dining-room D, the kitchen E, the shed F, the water-closets G, and on the second floor M M, the bedroom H and the bedroom I; above, the attic, and, of course, the cellar in the basement. Likewise in apartment houses of lesser importance, having approximately the same size and the same number of apartments per story, we shall almost always find the same standard plan. For this sort of building the decoration is nil or commonplace. The architect, being unable to go beyond the restricted amount usually allowed to him when he has to do with a dwelling of laborers or people of small means, has no use for much imagination. On the other hand, when he has to do with a more important substantial apartment house, the archi-

tect will have to display a certain initiative, even though he still must keep in view the standard plan of that kind of building. The apartment house (Fig. 2) which Mr. Friese has just executed at Paris, at the corner of the Champs-Elysées and Rue de Berry, belongs to this class. Its plan (Fig. 3) corresponds to a programme, in which apparently importance has been given to the great reception room A, by placing it in the axis directly in front of the landing, which secures for it much light and an advantageous shape. The rooms are well disposed: the dining-room B, the billiard-room C, the reading-room D, the seven bedrooms E, the small parlor F, the kitchen G, the pantry H, the servants' dining-room I, the bathroom J, and the linen-room K, are placed logi-

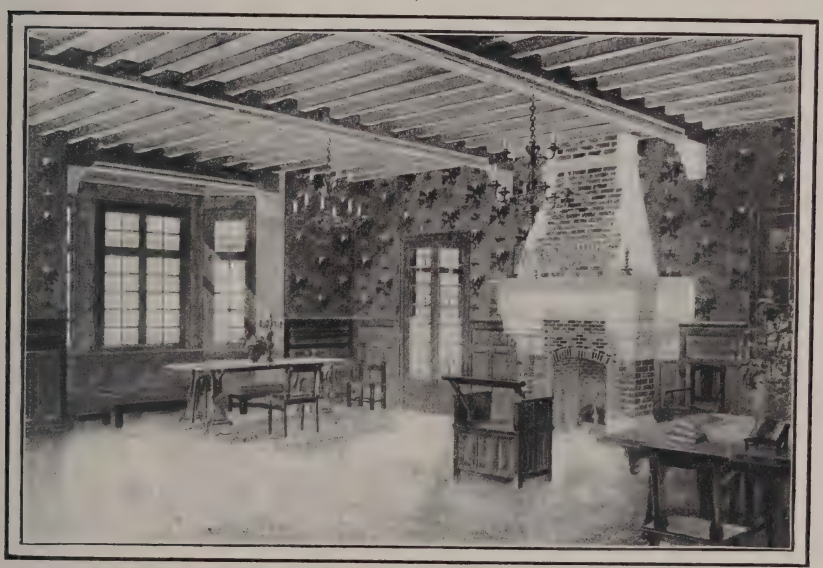


FIG. 11B. GRAND SALON, CHATEAU DE LA CHATAIGNERAIE.
M. Lucien Roy, Architect.

cally, they receive their light from the street, from the great court-yard or from the courts X. All the rooms have suitable connections through the anteroom and the gallery L and the exits M. The servants' stairs and the space for the lift O form the end of this apartment. On its side we find a less substantial apartment. This apartment consists, in fact, only of a gallery P, a large parlor Q, a small parlor R, a dining-room S, three chambers T, a bath-room U, the kitchen V and a small exit Y; the servants' stairs for it are marked Z; its elevator and the two elevators of the large apartment are marked W. The principal stairway (Fig. 4) which we should prefer placed closer to the large reception room and of frankly circular shape, has rather modest proportions; but then

again, it is large enough, because two elevators serve as exit for the large apartment. The vestibule forming the entrance is interesting, notwithstanding its soberness. On the whole, we have here an apartment house of sufficient richness, and yet one which has been treated better from the point of view of the construction than from that of the architectural decorator.

If we are compelled, in composing the plan of even an important apartment house, to limit ourselves to a programme of rather simple decoration, the case is quite different when we undertake a private residence, even though this dwelling be of modest proportions. This is the case with the small residence which M. Grandpierre has recently executed for the caricaturist Caran d'Ache, and whose plan for the ground floor A we give (Fig 5), as also the plan for the basement B, the plan for the second floor C and the plan for the third floor D. The house has on its ground floor two large reception rooms, one of them being the real reception room, the other serving as dining-room F, both being quite open, one upon the street, the other upon the garden and the gallery G, a winter garden, the view on which embellishes the dining-room. Under the landing-place of the stairway with straight railings, we find an exit through which we pass from the vestibule or from the dining-room to the pantry H, which contains a dumb-waiter, and to the water-closets I. These two rooms are in an annex jutting out from the basement and the ground floor only. An outside stairway gives access to the basement from the garden. In this basement, to which we can get from the interior of the house over stairs placed under those connecting the upper floors, we find the kitchen J, receiving its light from the street, further the room for the range K: lastly, four cellars L, one of which opens upon the street, with steps for the servants, to take firing material in, and a lower pantry with dumb-waiter M. Now let us see the upper floors. On the second floor, large bedroom O and sitting-room P, opening upon the street, with wardrobe; dressing and bath-room Q lit through a glass ceiling under a small court; second room R on the garden, water-closets S, and every room free of access. On the third floor, under the top, two bedrooms T T, linen-room V, water-closets V, exit X; the three cabinets receive their light from the little court Y. Notwithstanding its apparent simplicity the façade (Fig. 6) shows a fine design and its decoration is of a pretty artistic character.

We give in Fig. 7 the façade of another private residence with (Fig. 8) the plan of the ground floor A and the plan of the second floor B. The programme which guided the architect, M. Parent, in the composition of this residence, involved the settlement of an aristocratic young household. This explains the exceptional



FIG. 13.

PLAN OF THE HOTEL DU PRINCE BONAPARTE.

Architect, E. Janty.

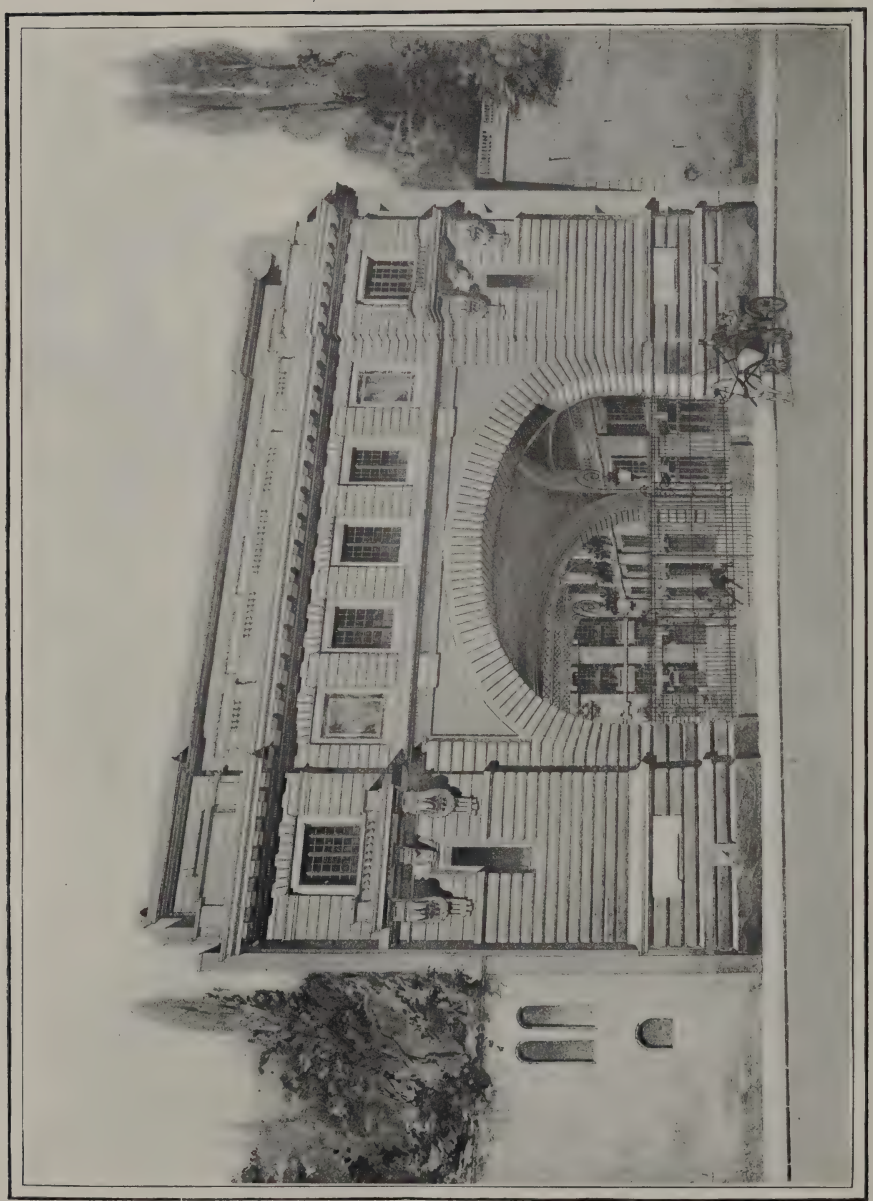


FIG. 14. HOTEL DU PRINCE BONAPARTE. E. Janty, Architect.

Façade on Rue Fresnel, Paris.

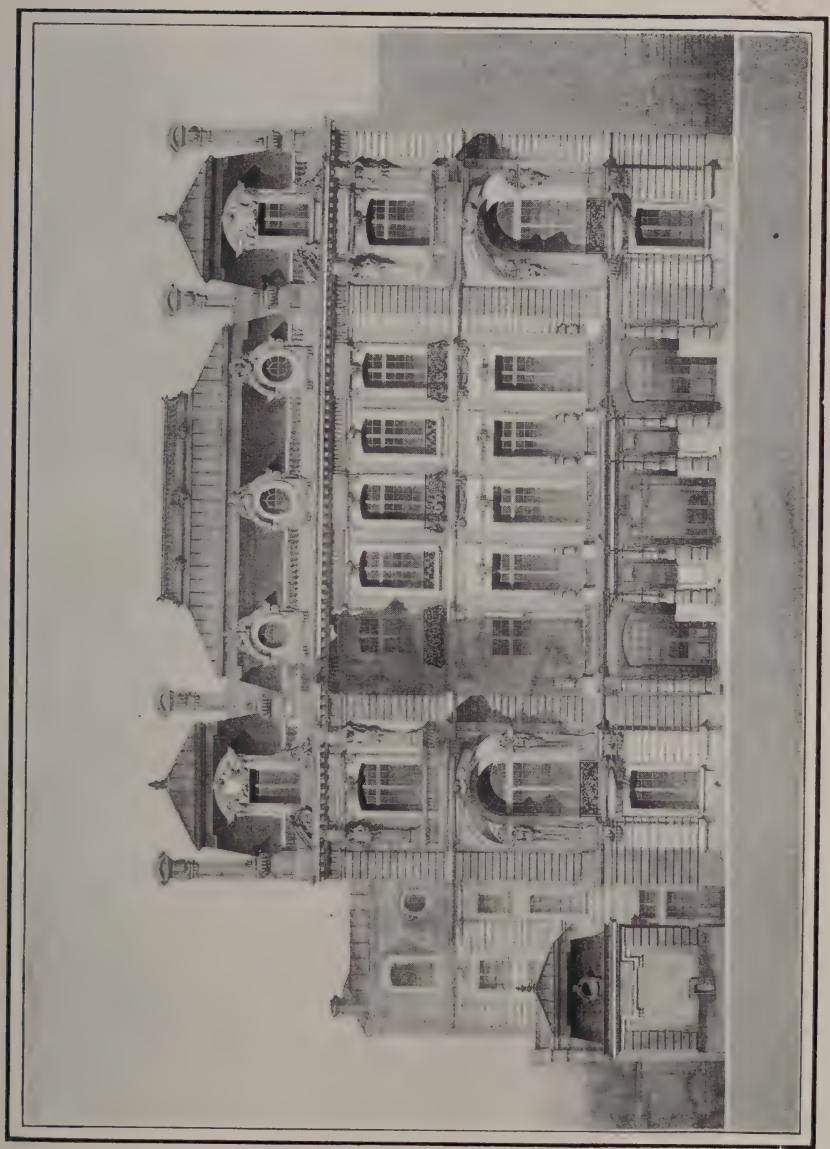


FIG. 15. HOTEL DU PRINCE BONAPARTE. E. Janty, Architect.

Façade on Avenue d'Iena, Paris.

prominence given to the reception rooms on the ground floor: a large room C, a second room D and a dining-room E; the vestibule F, the pantry G and the servants' room H make up this ground floor. The family apartments are on the second floor; they embrace four bedrooms I with dressing-rooms J and a smoking-room K. Remarkable is the special disposition of the principal stairway L, which leads to a tribunal M, over the entrance and furnishes an occasion for a very fine motive of decoration. The basement and the third floor are given up to the service of the house. In the distinguished and harmonious façade the style of the XVIII century has been adopted, so as to form a frame for works of the art of this epoch and for precious family souvenirs. But the architect has skilfully adapted to the modern requirements the form en vogue in the last century, and with antiquated elements he has produced a flawless work, of magnificent character and, above all, of positively French noblesse.

Our Figure 9 represents the plans of the ground floor A and of the second floor B of a structure which has more of the rural manor than of the château proper. This building is a very successful specimen of rational architecture. Its author, M. Lucien Roy, by reproducing old-established forms, has obtained elegance by skilful use of materials, by tasteful simplicity, without recourse to painting or moulding. He has thus overcome an almost unsurmountable difficulty. In his very clear plan, he has combined on the ground floor a vestibule C, a large hall D, a dining-room E, a panty F, a kitchen G, a washing-room H, a linen-room I, an entrance J, an office K. On the second floor we find the bedrooms. The principal façade of this manor (Fig. 10) is of a design which could serve as a model. We give also (Fig. 11) the rear façade and the view of the large hall, and (Fig. 12) some detail: the staircase, the beginning of the stairway, the skylight of the staircase and the porch of the servants' entrance.

The design of the plan (Fig. 13) which M. Janty has executed for Prince Roland Bonaparte is extremely remarkable. We give here the description—Ground floor: A peristyle, B vestibule, C smoking-room, D billiard, E principal stairway, F private stairway, G servants' stairway, H offices, I archives, J exits, K gallery, L watching-room, M store-room, N dark cabinet, O library, servants, P photography, Q historical museum, R courts, S waiting-room, T hydrotherapy, U armory, V wardrobe, X library store rooms, Y librarians, Z reserve library. Second story: A waiting-room, B library, C reading-room, D principal stairway, E private stairway, F servants' stairway, G gallery, H janitor's rooms, I toilet, K pantry, L dumb-waiter, M dining-room, N terrace, P exits, R courts, S large reception room, T small apartments. The ground,



FIG. 16.



FIG. 17. FACADE OF THE OPERA COMIQUE, PARIS.
M. Bernier, Architect.

of irregular shape, contains 2,706 square metres surface entirely built over; it opens upon two roads and has a frontage on Rue Fresnel of 34 metres (Fig. 14) and on Avenue d'Iena of 41 metres and a half (Fig. 15). The difference of level between the two ground floors amounts to fifteen metres. A large exterior court extends along Avenue d'Iena in front of the house, which rises to four storys. Its centre recedes slightly as compared with the two wings. The latter, broken by a large bay on each floor with large projecting balconies, trumpets, carytids, contrast through their sculptured relief with the severe order of the five windows in the centre. The effect is superb and the contrast powerful. The importance of the stories will be understood if we give the figures of their height: Ground floor, 4.50 metres; second floor, 7 metres; third floor, 5.50 metres; height of the façade on Avenue d'Iena, 26 metres to the top. If I was asked to point out what is perhaps the most remarkable in this palace, I would refer to the prominence

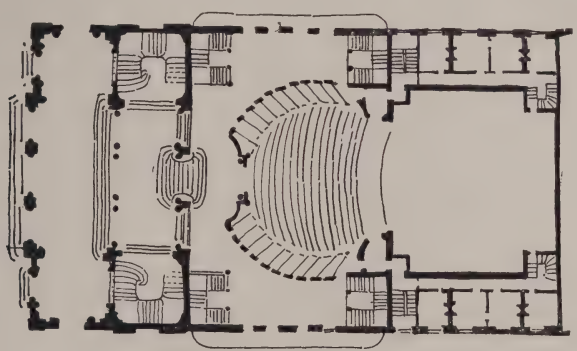


FIG. 18. PLAN OF OPERA COMIQUE, PARIS.
M. Bernier, Architect.

and the intelligent disposition of the library, made up of four galleries surrounding a square court, lit throughout from the ceiling; it can contain two hundred thousand volumes.

It would have been easy for me to give examples of much more pompous, much more pretentious architectural compositions. I might have referred particularly to a certain number of structures with Gothic façades; but they have not given any brilliant results. In fact, the structures in which forms of the middle ages have been utilized lose all their charm when they are not placed amidst favorable surroundings, and when they are emasculated by modern requirements of their picturesque character. The few examples which I have selected appear to me much more rational and more beautiful, thanks to their very soberness. These examples will show that one can be original without becoming bizarre



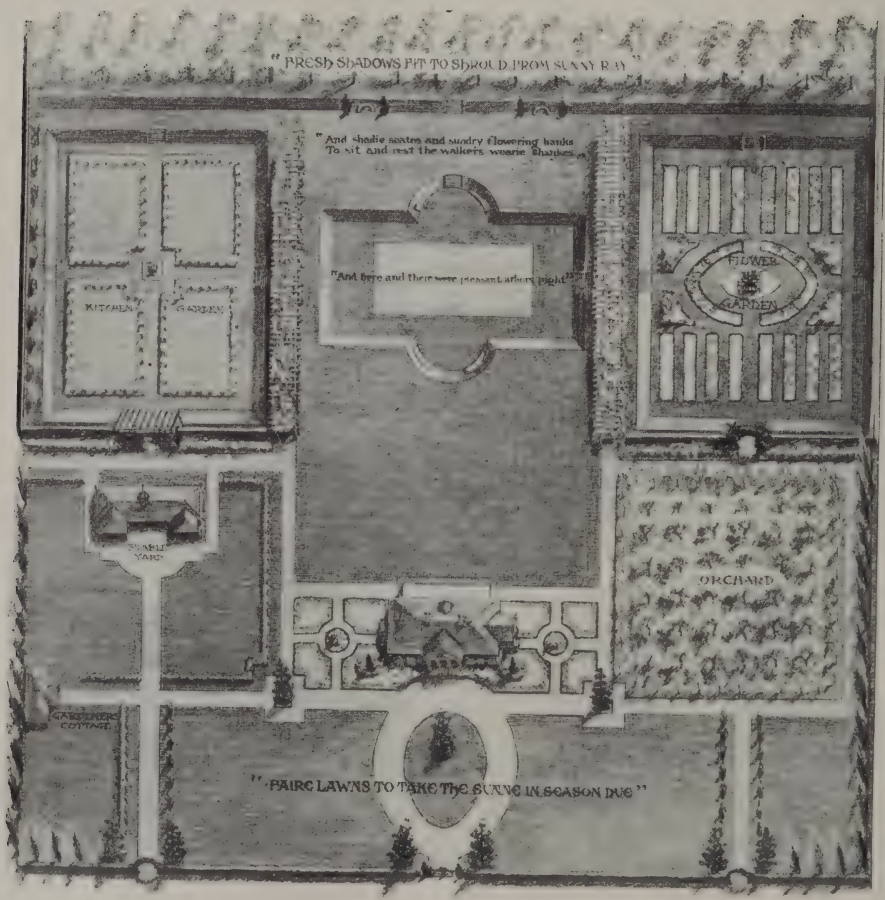
FIG. 25A. COMPETITIVE DESIGN FOR THE OPERA COMIQUE OF M. ESQUIÉ.

and elegant without affectation. In order to show how our best architects can interpret the same subject, I will give, in closing, some of the plans and façades sent to the competition for the new Opera-Comique of Paris.

The project of M. Bernier (Figs. 17 and 18) was adopted. It is certainly a great success. The façade is classical with three central *clavées* and two pavilions. But I have kept for the end the project of M. Esquié (Fig. 25); I was astonished that it was not adopted, for it seems to me the most rational and the most eloquent. The façade is an arcade resting on groups of Ionic columns and separated from the motives of the "ramplage" by a large vaulting. The "ramplage" in question is very interesting; two large pilasters crowned by fragments of an interrupted pediment serve as frame for a large bay divided by mullions into three arcades surmounted by an enormous bull's-eye window; over the latter is a tablet with the name of the theatre; other arcades, on right and left, accompany this bay. The basement is composed of arcades and of rustic pillars, with a large balcony supported by caryatids. On the sides we see bow windows of the lateral façades corbelling out over richly decorated rear vaults. So much for the description; but what is difficult to render in words, is the talent displayed in this composition. The most amiable forms of French architecture from the style of Louis XIII to and including that of Louis XV meet here, with perfect harmony. The decorative statuary work plays a predominant part; everything fits its place, every detail is set forth to its greatest advantage, and nothing clashes with the ensemble. This splendid composition is presented in a simple design rendered with very great skill.

Alb. Allain,
Architect, of the City of Paris.

"Close to the gate a spacious garden lies,
From storms defended and inclement skies.
Four acres was the allotted space of ground
Fenced with a green enclosure all around."



PLAN OF SMALL VILLA GARDEN.

THE VILLA GARDEN



"For when thy labour al done is & hast made all thy rekenynges
In stede of rest & of newe thynges thou goest home to thyne house anone"

THE domain of landscape architecture may be divided into two fields, the design of public and private grounds. The problems peculiar to each are clearly distinct; their treatment requires the knowledge of the specialist; and there can be no doubt that as the demand for landscape architecture increases, specialists will gradually evolve, who will give their entire time to the one class of design for which they are peculiarly fitted.

As the title of this article implies, we are here concerned with the second division only, which is, in many respects, the most interesting. The area of land surrounding the villa usually amounts to from one to four acres, and is likely to call for an expenditure, roughly estimated, of about four thousand dollars. The outline of the property is generally rectangular and does not contain any great inequality of surface. Further, the villa is frequently surrounded by beautiful country, whose scenery is unobstructed by towns or cities, and the few hamlets of farm houses that appear here and there nestling among the distant hills, add to, rather than diminish the beauty and interest of the landscape.

It may be premised that those who seek the quiet of the country, in spite of the cost, in time and trouble, of frequent traveling to and fro from the city, are devotees of the pleasures, and, one might almost say, excitements that are derived from the careful, if not scientific management of the grounds. They are lovers of the country; they love the attempts, always interesting, if not always successful, to make the herbaceous border thrive, the kitchen garden yield the first fruits of the season, and the greenhouse respond to the promptings of knowledge newly culled from some "Practical Exposition on the Management of the Conservatory!" It may be further premised that the reader is equally re-

sponsive to the intellectual charm that arises from having the grounds so designed and adjusted that the various interests, both utilitarian and æsthetic, shall figure as units in the general scheme. As in poetry, so in landscape architecture, the cultivated person finds in just form and proportion—that is, in the general design or motive of a given composition—a greater satisfaction and a more lasting pleasure than in any one of the parts. The most perfect object unfittingly placed is displeasing, while on the other hand, the details of a composition, even though uninteresting in themselves, become valuable and satisfying if fittingly combined and placed.

Perhaps no word in the English language is richer in delightful associations than the word "garden." But its glory is largely a thing of the past. The term as used nowadays conveys a picture to one's mind of long sweeping lawns, bounded by a "border plantation," and dotted here and there by circular beds of geraniums or "elephant ears." These are not gardens, they are creations of modern landscapists, who have adopted Nature as their guide and disregarded the principles of design as being too artificial.

Under ideal circumstances, garden designs should tend toward a common standard. While this is not attainable, owing to the infinite variety of problems which each particular case represents, yet it should be the endeavor of every designer to conform as nearly as possible to this ideal standard. The results of such a standard have been attained both in sculpture and architecture, and it is my belief that in garden design, although no classic standard exists, the so-called architecturally designed gardens of the seventeenth century come nearer to representing the ideal spirit than do the garden designs of the periods before or after. Indeed, it may be said that up to that time garden design was evolving toward perfection, and that since then, it has been steadily deteriorating. That which chiefly characterizes the gardens of old is the fact that they are designed: that the various features of the garden are individually subordinated to the principles of proportion, relation and symmetry. The principles that govern the designing of a house and the principles that govern the designing of a garden are essentially the same, though the application of those principles may differ. It may be well to point out here that during the past years undue stress has been laid upon the needfulness of conforming the design of the grounds to the style of the house; whereas, the obvious logic of the problem is first, to conform the grounds to the inherent and unchangeable character of the property and its immediate environment; and second, that the house be designed in conformity with the pre-determined character of the "ground design." This reversal of the logical order of the

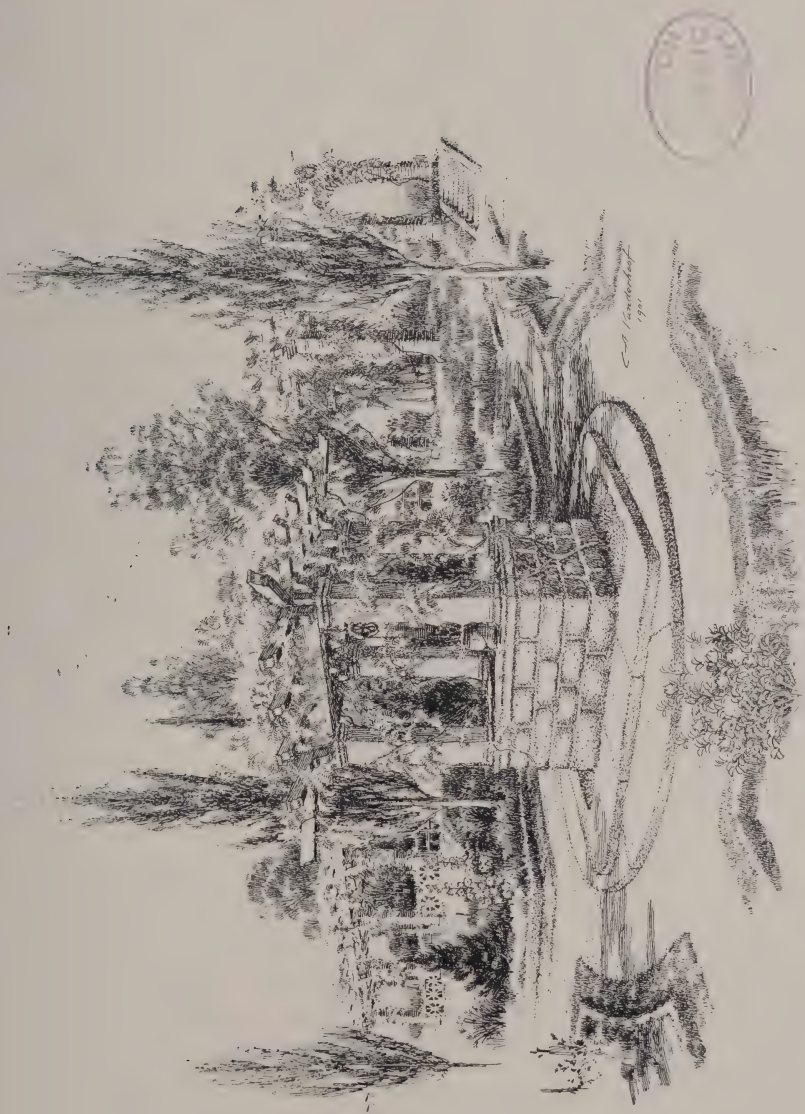


FIG. 2. SKETCH OF A WELL-HEAD IN A VILLA GARDEN.

determining factors in the designing of grounds and house, is obviously a resultant of the fact that the house is of primary importance from a utilitarian point of view, and has therefore been considered of primary importance in the design.

It is in accordance with these views of "garden design" that the accompanying plan and sketches have been drawn. The boundary of the property is supposed to represent the shape of the average villa plot, which necessarily determines, in general, the skeleton of the design. The boundary is not supposed to be concealed, but distinctly emphasized, both as part of the general effect and because the essential charm of the garden is in the fact that it supplies that seclusion which all desire, save the vulgar, or the philanthropist, who, though not willing to part with his goods, is yet willing that all the world should enjoy them at a distance. The word "garden" itself means an enclosed space, a garth or yard surrounded by walls, as opposed to unenclosed fields and woods. No garden is complete unless entirely enclosed, either by a wall or hedge, and especially is this true in regard to the small garden.

Although the object of the design and sketches is to show the possibilities of treatment of small gardens at a comparatively small cost, it must be understood that what is here shown is general, and must be viewed as suggestive rather than explicit. The accompanying plan represents both the maximum area and expenditure thereon that could be reasonably included within the term "Villa Garden." The area is four acres, and the expenditure, allowing for variation in the local facilities for work and in the nature of the property itself, is calculated from four thousand to five thousand five hundred dollars. However, as I have pointed out, the essential part of work of this nature is the design itself; that is, the ground plan arrangement of the walks, roads, houses and the garden. Therefore, those not desiring to expend the amount above mentioned, may easily reduce the expenditure to one-half, and yet retain the primary value of the design. For example, in respect to the present design, it is important to retain the tennis court in its relation to the two gardens and the back walk, but it is not essential that either the tennis court or the two gardens should be sunk, nor that the back walk should be raised. Thus, by omitting these variations in level, not only would the entire cost of excavation be saved (a most important item in the financial budget), but the necessity of having numerous steps be avoided. Again the drives and walks might be narrowed down, and less expensively constructed, while the cost of the arbors could be lowered by reducing them in size and by altering the material used for their construction; and, notwithstanding all these changes in the detail of the original design, the chief charm arising there-

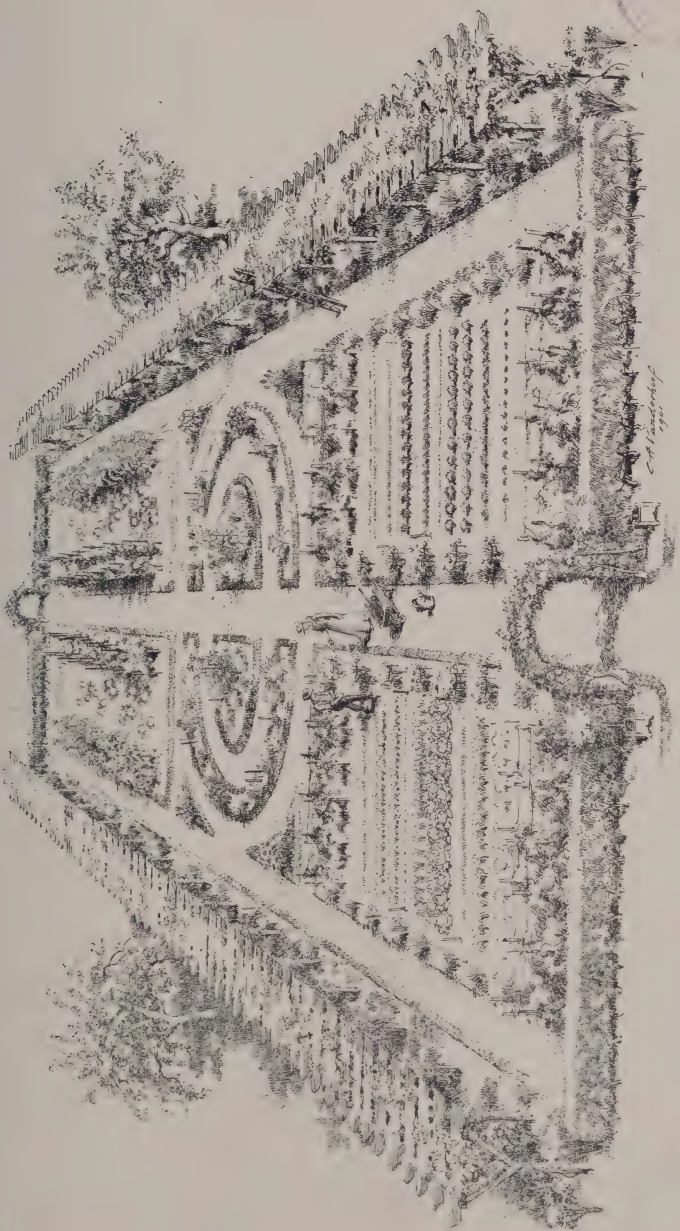


FIG. 3. THE KITCHEN GARDEN.

from would still be preserved. It is, perhaps, unnecessary to point out that if the cost is greater than is desired, even when reduced upon the lines above suggested, the expenditure could be further curtailed by combining the two gardens into one, as indicated by the accompanying sketch; while the idea of making a special feature of the tennis court might be excluded, the lines of which could be marked out upon some well-graded portion of the grounds.

There is another way of complying with the necessity of economy, which is, undoubtedly, the most satisfactory method. One of the peculiar charms of the small garden is not only to watch its growth under the hands of the contractor, but to note its gradual development under one's own personal care and supervision. And so although it may be necessary to have the roads and paths and heavy grading done immediately by contract, there are many features of the design that can be developed year by year, which would cause no inconvenience if left uncompleted for as long as might be necessary. By so doing not only does the personality of the owner become actually interwoven, as it were, into the spirit of the garden, but there will be the added pleasure of seeing the grounds slowly evolve into the perfected creation. Too often, however, does impatience overcome discretion and an inferior design is decided upon, which has economy for its sole advantage, and is almost sure to give dissatisfaction in the end. It is better to wait an indefinite time than to cheapen the design for immediate effect, resting in the fond delusion that later on the make-shift will be removed, and the final improvements completed; for the weight of inertia is strong, and the chances are a thousand to one that naught but the disintegration of dry rot will remove the impostor! It is, of course, necessary to build the house at once, but the completion of the garden can wait, if advisable, and the final results will amply repay the lovers of practical perfection.

It may possibly be suggested that the interest of economy would be furthered by omitting such features as arbors, and pergolas, covered seats, and the like, from the design, but I most emphatically object to any such proposition, for no garden is ideally perfect without some suggestion, no matter how slight, of architectural forms. Even although it be nothing more than a wire trellis, a rustic arch or a simple well-head, it is enough to create the subtile force of associations that link the humblest cottage garden to its more magnificent prototype of the ancient countries, so full to overflowing of the rich poetry and thrilling interests of human events. A "true garden," like any other artistic creation, be it sculptural, architectural or industrial, is not only interesting for its intrinsic value, as a source of immediate pleasure, but for its extrinsic value, as a source of associative suggestion, and if this latter "value" is omit-

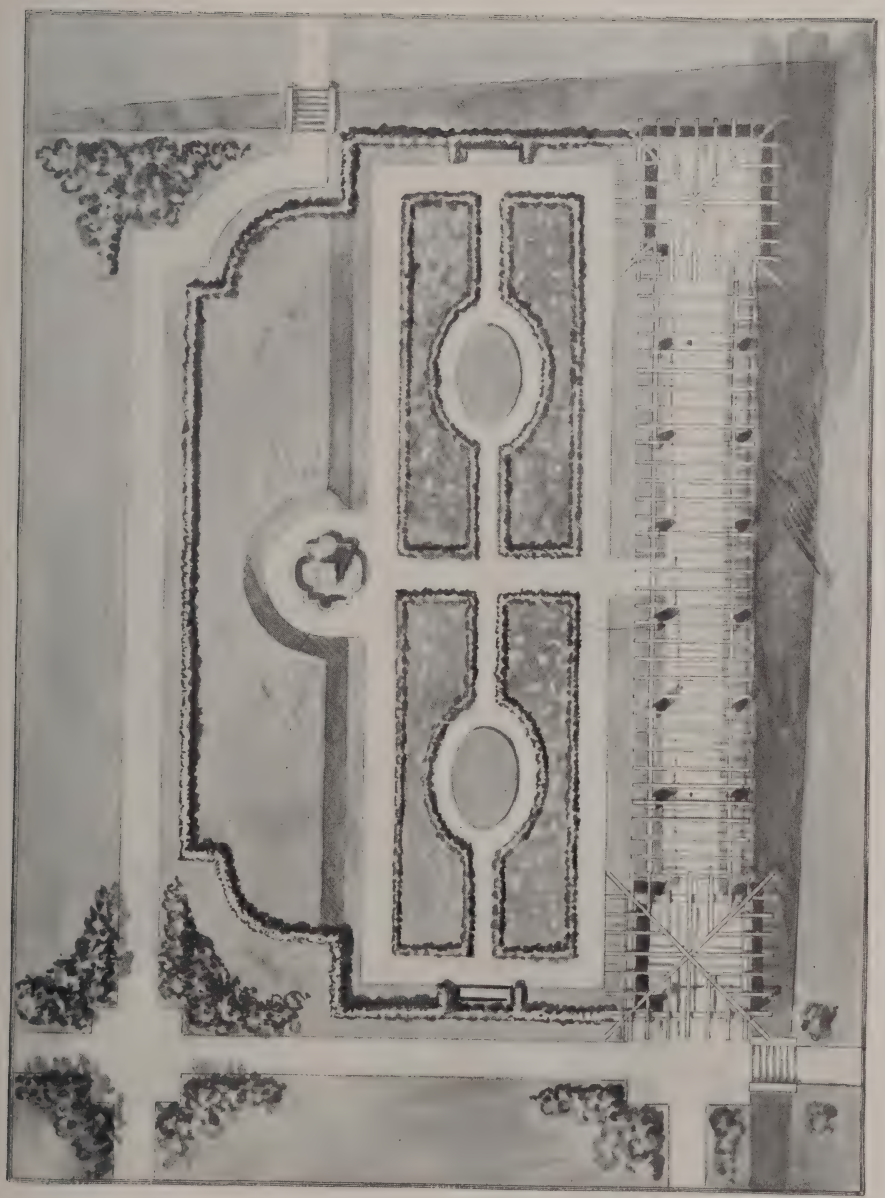


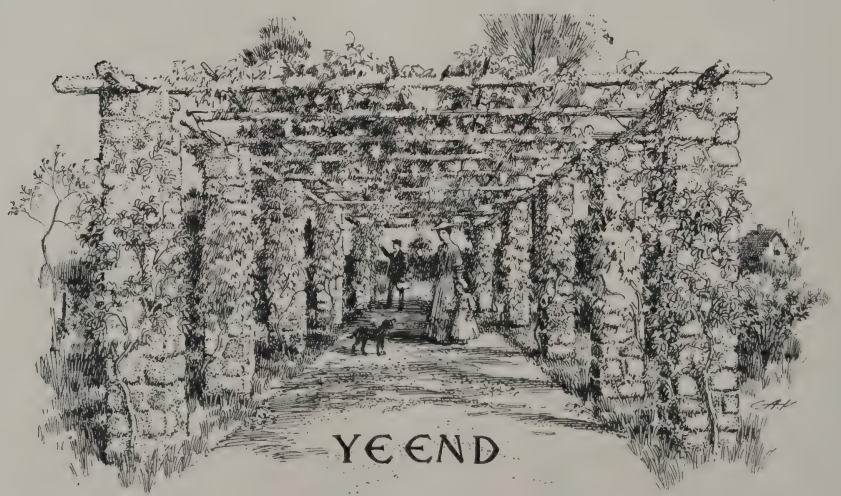
FIG. 4. PLAN OF GARDEN OF WILLIAM ALLEN BUTLER, YONKERS, N Y.
Architect, George F. Pentecost, Jr.

ted, the garden is robbed of its greatest charm to the cultured mind.

The first important point in selecting land for garden purposes is to determine whether it can subserve the requirements of a satisfactory design. The second, and equally important matter, is to decide upon the design; and as this is, after securing the property, of the first and last importance, the pressure of the closing season, or the urge of impatience to see the work commenced should not hasten the final determination of the design. Upon the care with which the entire scheme is originally planned depends the ultimate satisfaction derived from it: and no amount of skilful execution will rectify errors in the original composition.

The chief points to strive for in a design is the concentration of its various constituents: to each unit of the whole to give a positive value. The greatest wisdom is often displayed in knowing what not to attempt. Ninety-nine gardens out of a hundred, and especially formal gardens, are ornamented with stuff that could be removed and never missed. Simplicity, compactness, thoroughness and neatness are the key-words to the perfect garden. The adage of the "naturalists," that roads and paths are necessary evils is an error. Roads and paths, on the contrary, are not only necessary from a utilitarian standpoint, but have a positive value in the perfected design. There is a place for everything and everything is in its place, because the fancy of some particular person desired it to be in that particular spot. Nor is it necessary to consult Nature to find out what is and what is not permissible. Nature has little to do with the formal garden beyond supplying the raw material; there man alone and his vagrant fancies rule supreme. It is his garden, not Hers!

George F. Pentecost, Jr.



THE CONTEMPORARY SUBURBAN RESIDENCE.

UPON the mere numerical preponderance of the suburban house in the domestic architecture of the United States there can be no manner of doubt. The majority of ordinary middle-class Americans live in suburban houses, and it is a majority which will increase. Every large American city is fringed with a larger or smaller stretch of two or three-story houses, built for the most part of wood upon lots of varying size, but alike in the fundamental fact of being individual and detached structures. Indeed, a great many Western cities of not more than a few hundred thousand inhabitants, which have come in for a considerable percentage of their growth since the introduction of the trolley, are chiefly suburban cities. It all depends upon the machinery for distributing population. When a pair of legs was the only vehicle of locomotion which the ordinary men could afford, large cities were unavoidably compressed into very small quarters. The horse car and the "bus" added a mile or two to this area, but did not dispense with the necessity of severely economizing space. The trolley has stretched it out several miles further, while future improvements in the machinery of transit may well make any spot within fifty miles of the centre of an important city available as a place of residence for its wage-earners. And we may be sure that men will take just as much space as they can get. The extent to which urban population may be distributed will be restricted only by the means of transit, which it will pay to provide.

In view of this numerical preponderance of the suburban house in American domestic architecture, it is manifestly of the utmost importance that a good standard of design should be established. As long as the suburban house is, to speak mildly, merely a collection of architectural improprieties, there is manifestly no hope for the education of the great American public in matters of taste. In the city graceless and tedious houses certainly exercise an evil enough influence upon popular æsthetic standards; but in the midst of a city the ordinary resident has little or no personal participation or responsibility in the making of the house in which he lives. His dwelling is forced upon him, and he has to take it as the good builder made it, whether he likes it or not. The suburban resident, on the other hand, as often as not, mixes personally in the high art of architecture. His house frequently does, and always can, embody his own ideas and tastes.

He takes a lively personal interest in his 50x150 lot, in the dwelling that is perched upon it, in the vines and flowers that he has

carefully planted, and in the green grass which he faithfully cuts. How frequently in wandering through suburban towns, does one come across a bit of a place, in which some freak of arrangement, some unusual elaboration of foliage or flower shows plainly the loving hand of the owners; and in almost every case the little trick is as laughable as it is pathetic. But this interest may well be the seed of better things than gates of rusticated masonry to some little frame cockle-shell of a house. The suburban dwelling really interests more average Americans than any other architectural product; and the improvement of the design of these dwellings



FIG. 1. HOUSE AT SUMMIT, N. J.

would do more to refine popular æsthetic standards than the most assiduous attendance upon art exhibitions and lectures.

That such an improvement is taking place, it is the purpose of this article to show, but before we come to the showing it will be well briefly to consider what the limitations and advantages of the detached suburban house are. Manifestly its great advantage consists in the simple fact of its detachment. It need not be treated merely as the section or slice of a row. It is separated from other houses, if not entirely dissociated from them, and can be allowed a certain amount of individuality. But it is also obvious that this detachment is not absolute. The architectural problem which it presents is largely affected, if not entirely controlled

(1) by the natural advantages or disadvantages of the site, and (2) by the general street plan and lay-out of the suburb in which it is situated. The suburban house, consequently, just as it differs from the city house, in possessing some individual rights, also differs from the country house. in the fact that its surroundings are not entirely a matter of choice. This condition may be disguised, as it is in some selected suburban settlements, by scattering the houses, not along streets that run parallel to, or at right angles



FIG. 2. HOUSE AT SUMMIT, N. J.

with, each other, but along streets that, like country roads, pursue devious and irregular courses. Nevertheless, whether a regular or irregular street plan be adopted, the fact remains that the suburban house is but an incident in a general scheme, which cannot be controlled by the designer of any one place.

Hence it is that an absolutely essential prerequisite of good suburban architecture is an interesting and effective general lay-out. It is not the purpose of this article to define the conditions to which an interesting and effective lay-out should conform; but a few gen-

eral considerations may be urged. In the first place, if the grid-iron plan is inconvenient and uninteresting in a city, it is even more so in a suburb. It is inconvenient, because a suburb always has a business and a railroad centre, to which, more or less directly, all the main roads should lead, and it is uninteresting, because it takes no account of the lay of the land, and the desirability of keeping in a suburban street something, at all events, of the unexpectedness and irregularity of a country road. In the opinion of the writer this seeking after the merely unexpected and picturesque should not be carried too far in any scheme of landscape



FIG. 3. HOUSE AT PLAINFIELD, N. J.

lay-out. It should be frankly recognized that a place, which is to be made suitable for the habitation of men, must be treated formally, and must reach its effects, not by merely imitating natural appearances, but either by modifying or enhancing them for human purposes. Still, any amount of the unexpectedness and irregularity which the designers of the street system of some of the better suburbs near New York are constantly seeking, is much to be preferred to the dreary, rectangular dullness of the grid-iron arrangement. The great controlling purpose should be to find an arrangement appropriate to that mixture of town and country, which a suburb must necessarily be, and for this reason it must become neither too obviously citified or too affectedly countrified.

It is rarely the case, however, that an American suburb sins in the direction of being too countrified. It is so in some few cases; but for the most part the streets are blocked out in a wholly meaningless and mechanical manner, and with no other purpose in the world than to slice off a larger or smaller number of villa plots. The great need of the average suburb is something more of the atmosphere and flavor of rural life, a more intelligent at-



FIG. 4. HOUSE AT SOUTH ORANGE, N. J.

tempt to individualize each separate house and grounds. The most frequent and fatal obstacle to such an individual treatment of each separate place is the small size of the plot on which the average suburban house is built; and this in turn is partly the result of laying out the blocks on too small a scale, so that the effect of the little house with its back-yard touching another back-yard in the rear, and with only an alley-way dividing it from the houses on either side, is not essentially different from that of the poor part of a city. Of course, in the great majority of cases, this is simply

and entirely the result of necessary economy, but in a large number of cases it is just as obviously the outcome of ignorance or indifference. In all these latter cases an entirely practicable increase in the size of the better grade of suburban lots, would give the architect a chance really to individualize the house and its surroundings. What these dimensions should be we do not attempt to say. It is sufficient to insist upon the desirability of making them as large as possible, because the larger they are, the more complete and self-contained each individual place may become. At the present time the land-owners, who are developing under careful



FIG. 5. HOUSE AT SUMMIT, N. J.

restrictions, the pleasantest suburbs near New York, rarely sell in plots which are less than an acre, and while such plots are available only for relatively well-to-do people, it is, after all, only the relatively well-to-do who, under present conditions, count at all in the process of architectural improvement. As the popular taste for the proprieties of suburban architecture becomes more refined, the size of the average plot upon which the suburban house is built will most assuredly increase, and the tendency will be accelerated by the constantly larger and consequently cheaper amounts of land which will be opened up by improved methods of communication.

The larger building plot, which we have mentioned as one condition of the architectural improvement of the suburban house would have many advantages. It would enable the architect to situate the buildings very much further back from the street; it would give him a chance to provide an effective approach, a proper grouping of trees and foliage, a good distribution of spaces, and, in general, a plan for the grounds, which was convenient, logical and appropriate. The house would become more of a country



FIG. 6. HOUSE AT SUMMIT, N. J.

house, with a definite place in the landscape, and an arrangement of the grounds which would give its owner a chance by their cultivation and development, to take more than a languid or sentimental interest in the soil. At present, this is undoubtedly the crudest aspect of American suburban architecture. One sees many suburban houses which must be and are extremely comfortable places in which to live. One sees fewer, but still a good many suburban houses, in which an intelligent attempt has been made to draw an appropriate and well-proportioned façade; but it is a very

rare thing to come across a suburban place, no matter how large, in which the grounds have been treated with any kindness or any feeling for landscape architectural effects. A privet hedge outlining the property, a few shrubs scattered promiscuously about, a tree here and there where it has happened to grow, a hydrangea or a bunch of geranium in the midst of the lawn—that is, as a rule, as much landscape gardening or architecture as the ordinary suburban resident needs, and when he seeks for more the result is so flagrant that one inevitably regrets that he had not remained content with less.

This deficiency in the ordinary American suburban and country house is due to the failure of the average American to make any adequate provision for the treatment of his grounds in relation to his house, and the consequent inexperience and lack of training of suburban architects in this class of work. But conditions are likely to improve in this as well as in other respects. Although very few actual results of the demand have as yet been produced, there is a manifestly increasing interest in the appropriate treatment of the grounds; and it is to be expected that in time this interest will have a wholesome and pervasive effect upon all the better grades of suburban architecture. In that event the good suburb will cease to become the commonplace and dreary thing which it now so often is; but the precise forms, which the change will take are not easy to predict. In the better American suburbs of the present time the effect which, by the natural process of tradition, both owner and architect have sought to attain is something like that of a New England country town. The streets are lined with two or four rows of elms or maples; the house is separated from the street by a considerable stretch of lawn; but no attempt is, as a rule, made to obtain any actual privacy, and the walls which so frequently shut off the grounds of the house from the street in a foreign suburb, are rarely if ever seen. It is improbable that American neighborliness will ever consent to the complete separation both from the passers-by and each other which the foreign suburban resident likes; but as the desire for a more formal and architectural treatment of the grounds becomes stronger, it is probable that screens, both of brick and foliage, will be much more freely used than at present. The use of such screens will have at least one good result. The American suburban resident of the present day not only likes to expose himself and his family to public view, but he has a much less commendable want of reticence about some of his domestic arrangements—such, for instance, as the drying of his laundry—which are not either interesting or seemly objects of public inspection, and one of the first reforms of suburban architecture will most assuredly be the more general

erection of some effective barrier, behind which the household can dry its linen.

We have already indicated the point of view, from which, in the past, the American suburban house has been most frequently and most flagrantly open to criticism; and this is that it has not been, architecturally speaking, a country house at all. The one characteristic which should distinguish rural architecture is that of possessing some organic and necessary relation to the land on



FIG. 7. HOUSE AT CRANFORD, N. J.

which it is situated and the landscape by which it is surrounded. This appearance of composing unobtrusively and effectively with their site and surroundings has been obtained in rural buildings by two methods. In some of the French country architecture, and in that of the Italian villas, it was obtained by low, simple outlines and masses which fitted the structure snug and close to the land on which it was built. On the other hand, in many English country houses, a building, which structurally was not very well adjusted to its site, was given an equally appropriate effect by means



FIG. 8. HOUSE AT PLAINFIELD, N. J.

of the planting and treatment of the land itself, which was, as it were, built up and worked over until it presented a most picturesque, attractive and eminently habitable appearance. The very same thing was frequently done in former times in this country; and the better American rural architecture in the Colonial period, whatever its defects, was eminently suited to the country in which it was built, and the uses to which it was put. But more recently the American country, and particularly the suburban house, has not been informed by any proper feeling as to the kind of building which fitted the land, and the country house will improve just in proportion as this feeling is renewed among suburban architects and their clients.

From 1885 until 1895 the great mapority of suburban houses were built in what was known as the "Queen Anne" style; and surely no "style" was ever invented which lent itself more to the freakish and meaningless eccentricities which are as utterly out of place in rural as they are in every other kind of architecture. A "Queen Anne" cottage was at best a prettified bijou frame building, which in its design was a collection of incongruities and in its effect gave the impression of something perched upon the land, instead of something growing logically out of it. And the detail was as incongruous and meaningless as the masses and outlines. On the inside the better grade of these houses were extremely comfortable; and this fact showed what both their designers and owners had most at heart in drawing and approving the plans. The outside practically took care of itself, except so far as the piazza was concerned, for the average American's idea of a country or suburban place was a place in which he could sit on a "piazza" and, when not reading the Sunday newspaper, "look at the 'view.'" This piazza itself was as a rule an appendage, which absolutely prohibited a logical and appropriate design. No one will dispute the fact that in the summer climate of this country, a verandah of some kind is an absolute necessity; but the conception of making a suburban house practically nothing but a comfortable interior and a spacious piazza could have originated only among a people whose interest in the country was most external, artificial and occasional. It is only people who rarely go off their "piazza," who could sacrifice the whole building to such an extension into the open air of the interior of the house.

Since 1895 there has been a marked tendency toward an improvement in the design of the better class of suburban houses. By the better class of suburban houses, we do not mean those that are built by exceptionally wealthy men from plans by well-known city architects; we mean the suburban house which costs somewhere between $8,000 and $15,000, and which is as a rule designed, either by local architects, or perhaps some local builder. The illustrations, which accompany this article have been selected somewhat at random, from houses of the class mentioned. They have not been selected because they are in themselves highly satisfactory examples of suburban buildings. On the contrary several have been used, such for instance as Fig. 3, because they show the old freakish tendencies interestingly mixed with traces of a more reposeful and intelligent treatment. Every one, however, who has watched the course of suburban building during the past fifteen years, will recognize that they indicate a decided advance over the average which prevailed during the earlier part of that period. As a rule they are no longer cocked

up capriciously in the air, but take their place more naturally and smoothly upon the ground. The piazza is much less frequently the chief external feature. While it is still in many cases unduly prominent, it is either much better managed, or the design, as in Fig. 8 is frankly adapted to it. The roofs are for the most part pitched lower, and the outline is not broken by a number of meaningless and fussy gables. The whole design is prone to be decidedly simpler and more logical, and whatever ornamental detail there is, is better managed. The buildings remain for the most part commonplace, and they are likely to be least successful where they are most original. They indicate rather the prevalence of a better general tradition than better training and taste on the part of their individual designers. Several good types of design and material have been introduced by well-known architects; and these types are little by little leavening the whole mass. For Americans are the most quickly imitative people in the world; and when their imitativeness has a standard to copy, which makes an appeal to their sense of excellence, good effects follow with astonishing rapidity.

Generally speaking, it may be said that the designs indicate three tendencies. In the first place there is the tendency to moderate within bounds of taste and decorum the peculiar "features" of the "Queen Anne" cottage. Gables are cut out, the roofs are less inclined and a coherent, modest and decent design tends to emerge. More distinctive and dignified effects are, however, obtained by the much more frequent use of Colonial forms. The Colonial house had the immense advantage of being a country house of moderate height and good proportions, built by people who lived and not merely slept in the country, and its increased adaptation to modern uses, of which there are many signs, can be productive of nothing but good. Finally, it is natural that the Elizabethan timbered house should begin to be more extensively used, for it always appeals to people whose taste in architecture is for the quaint and the picturesque. Its danger always is the sacrifice of simplicity and good proportions to mere picturesque charm; and it needs the softening and moderation of a much more elaborate and loving treatment of the surrounding land than it has yet received in this country.

What the suburban architect should then try to obtain is, in the first place, a good general lay-out of the suburb, in which he is interested, the division of the land into plots large enough to give individual hurroundings to each particular building, and an architectural treatment of this plot, which seems to create an inevitable relation between just that site and just that building. The best that can be said for contemporary suburban architecture is that

in individual and selected cases, one finds a better general plan, larger plots and more seemly buildings; but in no case has full architectural advantage been taken of these improved conditions. While architects and owners are feeling their way in the right direction the process of improvement is still in its earliest stages.

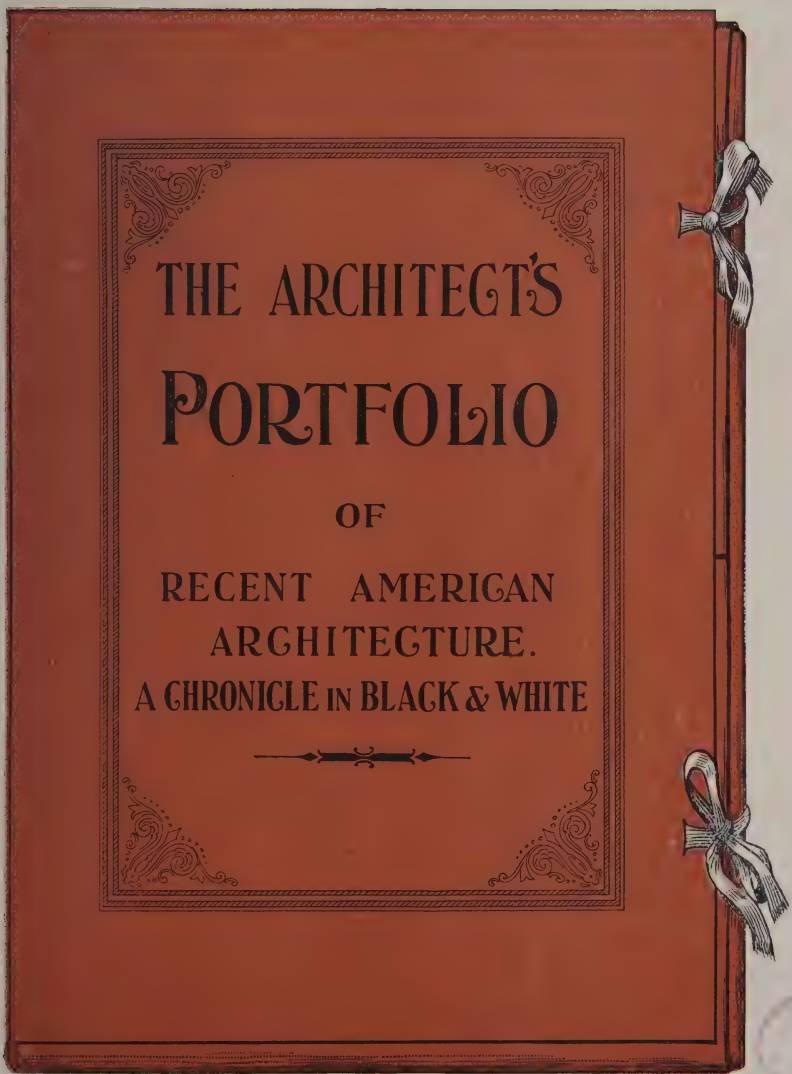


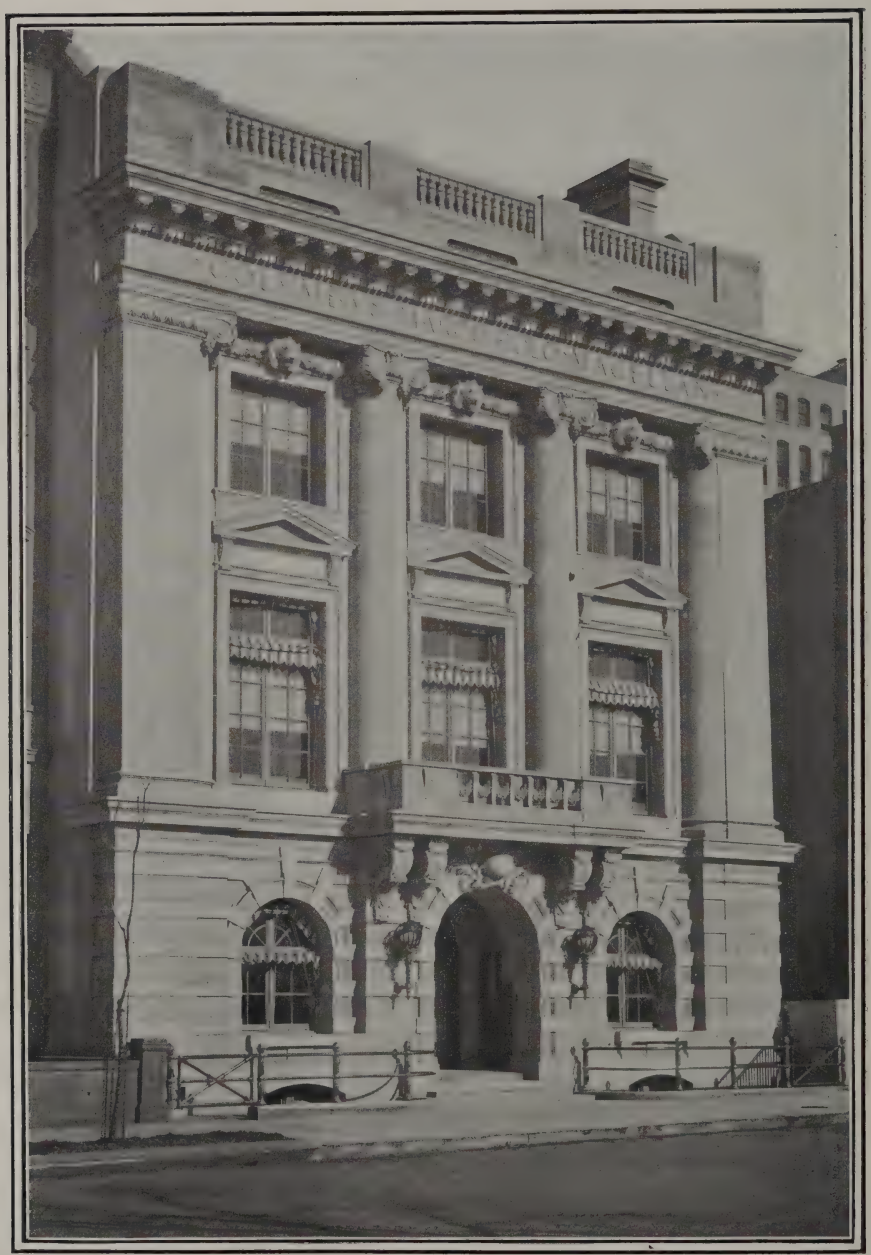
FIG. 9. HOUSE AT PLAINFIELD, N. J.



M. Valgren, Designer.

L'ART NOUVEAU MANTELPIECE.
(In possession of W. K. Vanderbilt, Esq.)

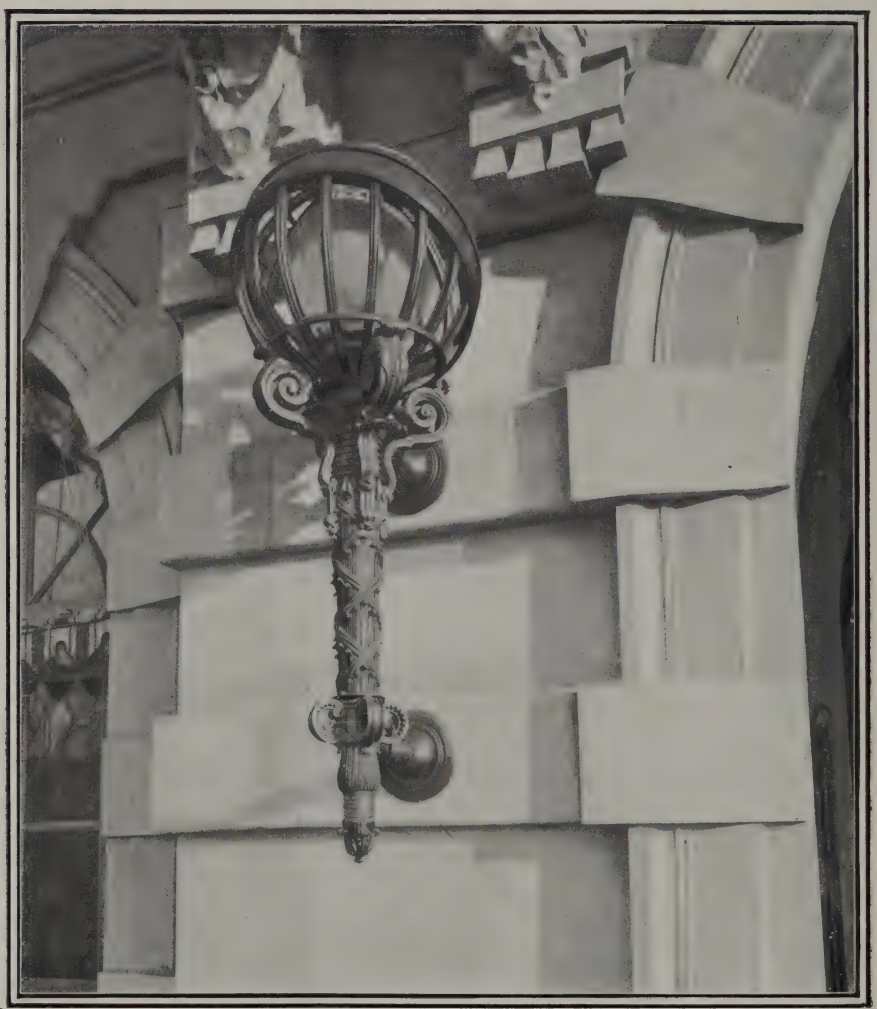

THE ARCHITECT'S
PORTFOLIO
OF
RECENT AMERICAN
ARCHITECTURE.
A CHRONICLE IN BLACK & WHITE



THE AMERICAN GEOGRAPHICAL SOCIETY'S BUILDING.
West 81st Street, New York City. Howells & Stokes, Architects.



THE AMERICAN GEOGRAPHICAL SOCIETY'S BUILDING.
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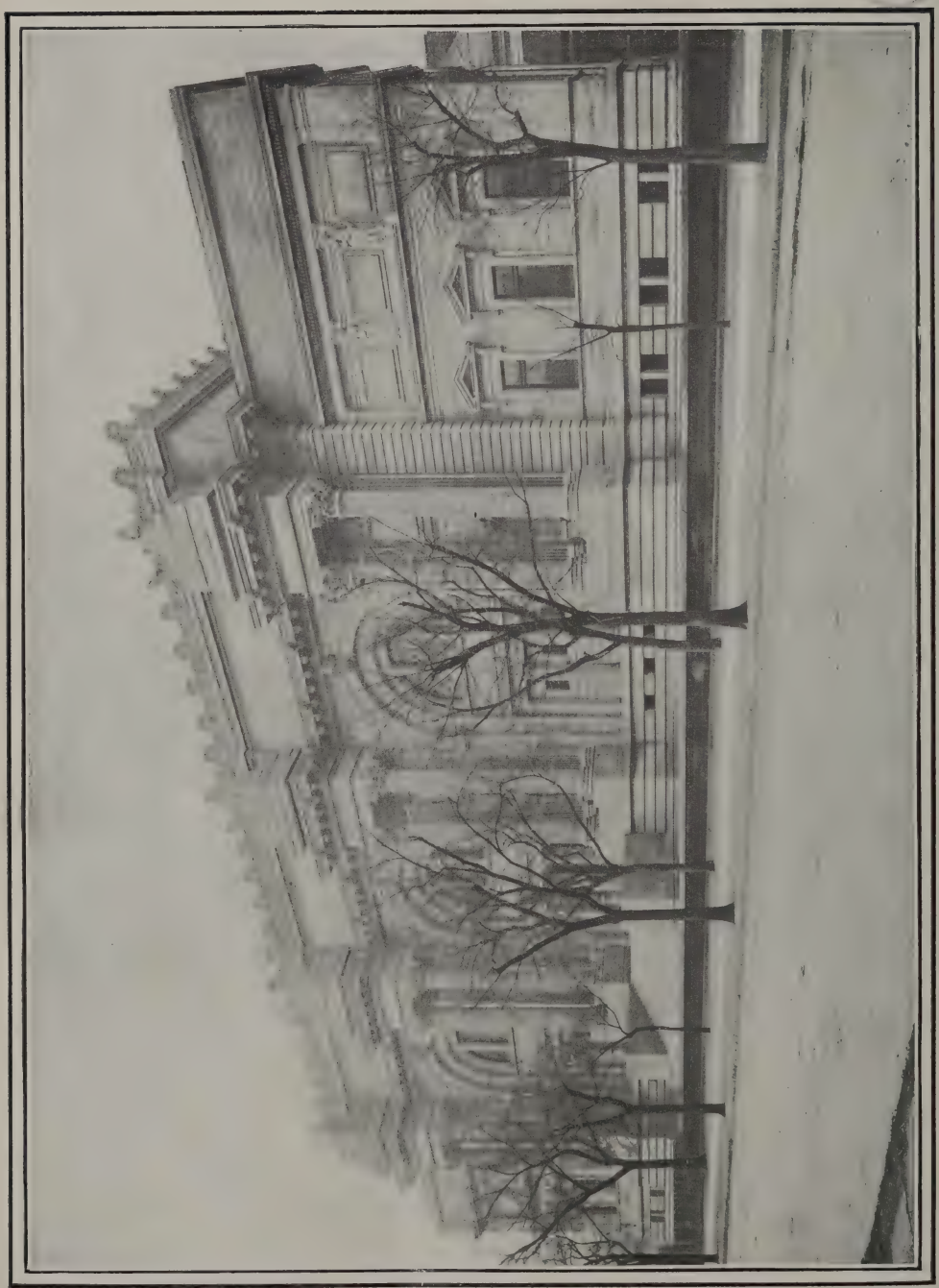
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METROPOLITAN MUSEUM.

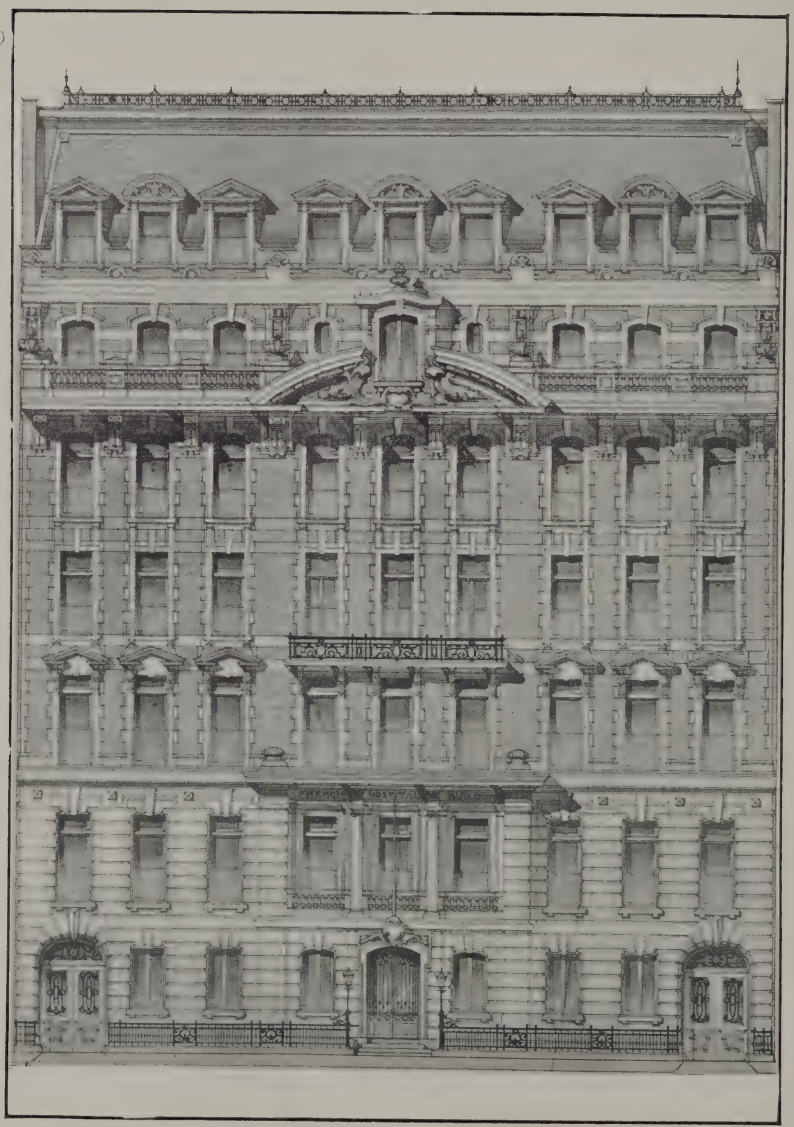
Fifth Avenue, New York City.

The late R. M. Hunt, } Architects.
R. H. Hunt, }



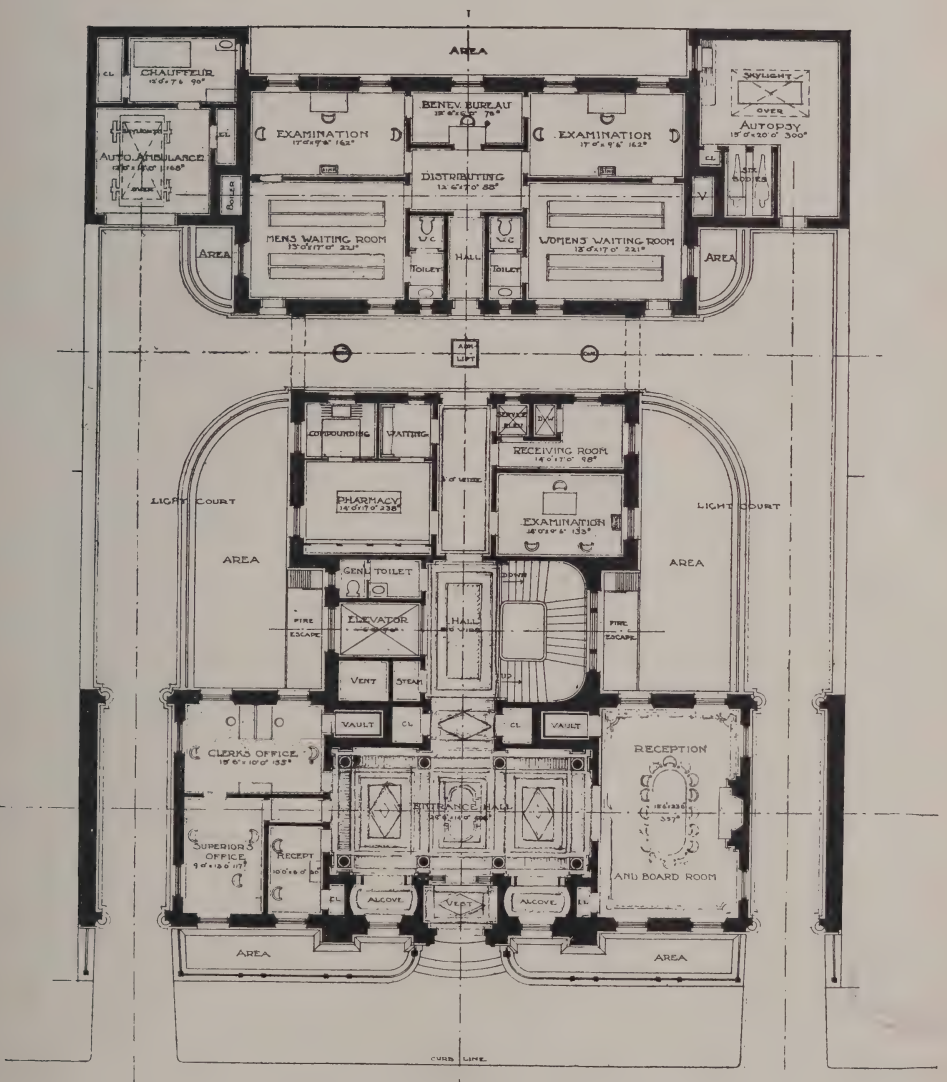
APARTMENT HOTEL BUILDING.

New York City. F. R. Comstock, Architect.



PROPOSED FRENCH HOSPITAL.

West 34th Street, New York City. Welch, Smith & Provot, Architects.



FLOOR PLAN, FRENCH HOSPITAL.

West 34th Street, New York City. Welch, Smith & Provot, Architects.



LYING-IN HOSPITAL.

2d Avenue and 18th Street, New York City. R. H. Robertson, Architect.



32 E. 51st Street, New York City. RESIDENCE. Architects, Charles Brendon & Co.

The illustration shows an interesting modification of the usual form of apartment house. It is really a compromise between the strictly basement and "high-stoop" house, combining the advantages of both. The service entrance, it is seen, is here separated from the main entrance and vestibule. The first floor contains, besides the entrance, a reception hall and toilet. The stairs ascend at the rear side of this hall, which occupies about one-half of the whole depth of the house, the rear part of the floor being devoted to kitchen, offices and servants' sitting-room. On the second floor the stairs open onto a central foyer hall, the drawing-room occupying the front of the house, and dining-room and pantry the rear. All on this floor, therefore, is according to the usual type of the American basement house; nor is there any divergence on the floors above. As to the design of the façade, it is an orderly piece of work of an eclectic character. It is commendable for the amount of discretion it embodies, for its "homely" air, and for a certain refinement.



THE GRIDIRON BUILDING.

Cor. Broadway, 5th Ave. and 23d St. D. H. Burnham & Co., Architects.



OFFICE BUILDING.

Northeast Corner Wall and Water Streets, New York City.

Robert Maynicke, Architect.

RECENT APARTMENT HOUSE DESIGN.

Central Park West, New York City

IN the October number of the Architectural Record we took a walk down Upper Fifth Avenue, and noted the stream of architectural tendency swirling along that thoroughfare. That thoroughfare might as well be called Central Park East as the corresponding thoroughfare on the western side of the park Central Park West. But Fifth Avenue traditionally denotes swelldom already, while Eighth Avenue is of an humble association. Mayhap the very fact that the East Side is a prolongation of the most fashionable avenue of a former generation is the reason why it should have been chosen as the abode of the billionaire. At least, there is none in the topography or otherwise in the nature of things, why one side of the park rather than the other should be picked out for the abode of the wealthy beyond the dreams of avarice and the profit of the early snappers-up of "options." But so it plainly is, that Central Park West is given over to them that live in apartment houses. A single dwelling is as rare a bird in these regions and as like a black swan as an "associated dwelling" on the side more favored by the caprice of fashion. It is a fact, that, excepting the several "sides" of Chicago, no human town is capable of sustaining two acknowledged and equivalent centers of fashion.

Perhaps the tendency of Central Park West was determined and its fate as the seat of the fashionable apartment house fixed when, about twenty years ago, the first of these houses was erected in the Dakota, for long a lonely pioneer. It is not especially encouraging as an architectural sign of the times, to consider that that building remains, architecturally, by far the best of the apartment houses of the west side of Central Park, and, for that matter, of the whole city. The confronting Majestic lacks the form and outline of the earlier building, and the San Remo, up above, is a grievous thing to look upon from the Park. Even these two are becoming antiquated, in comparison with the great mass of the apartment houses built and building higher up the avenue, though they remain conspicuous by size and situation, and do not suffer by comparison with most of their successors. For the two miles, almost, from Seventy-second to One Hundred and Tenth, the frontage of the park is an almost continuous row of apartment houses, of which the respective dates can be made out partly by the architectural style, but still more by the com-



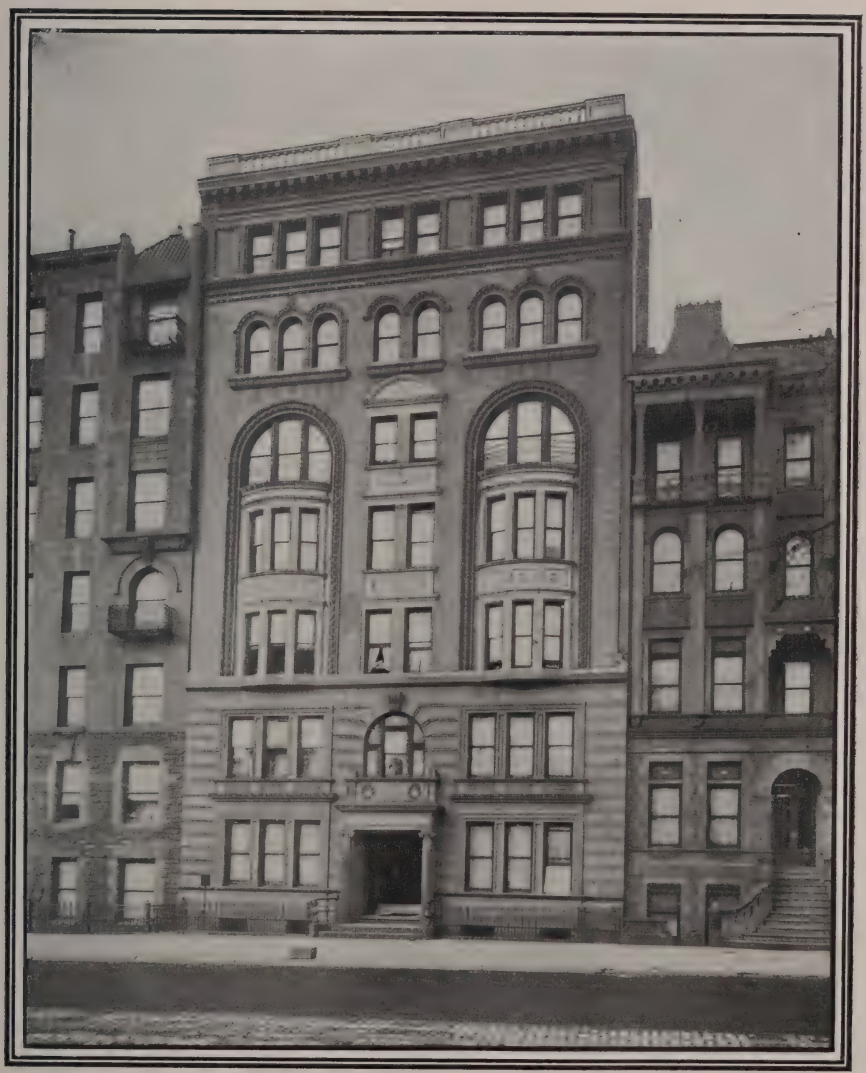
APARTMENT HOUSE.

Nos. 348 and 349 Central Park West, New York City.

parative expensiveness. There are whole block fronts among the older, which denote that they are intended for the class of tenants who overflow upon the Harlem flats and the side streets of the upper East Side. But the later additions plainly indicate that they are meant for occupants much better-to-do. The exterior architecture, as well as the interior accommodation, is aimed to attract such occupants. It constitutes, in fact, a criterion, applied by experts, of the architectural taste of the generality of the fairly well-to-do of New York. And it is not flattering.

The American in Paris is apt to find that city monotonous, missing from the streets the wide variety of material, as well as of design, which he has left at home. But an American who had spent several years in Paris, on returning to his native New York was impressed precisely with the monotony, in spite of the apparently desperate efforts of all the builders to escape from it. One can very well understand that after a promenade the length of Central Park West, there is variety enough and to spare of material, brick red and yellow and black and brown and gray, stone from all quarries and of all tints, against the uniform gray Caen of the French capital. But the sameness and tameness of the architecture are the more insistent and depressing by the very violence of the attempts to escape from those qualities, and the very strain after novelty. As the Parisian would say: "Plus ça change, plus c'est la même chose." Imagine this speckled and variegated front of two miles all of the same material, and relying for its differences upon individuality, upon the careful working out in the various fronts of what might fairly be called architectural ideas, of some harmonious proportions, some well wrought features. How much more interesting it would be! In fact, architectural ideas are rare swimmers in this long expanse. Let us try to pick out what there are.

Doubtless, the apartment house, which consists architecturally of a street front of five or six, or seven or eight stories does not readily lend itself to architectural treatment. It is an aggregation of rooms of which those that are visible from the street, being the show rooms of their several dwellings, are of the same importance all along each floor, and in the different floors. The requirements of the dweller on the fifth floor are precisely those of the dweller on the first, so far as the builder takes notice of them. The spacing and the dimensions of the openings are fixed by practical considerations. There is none of that subordination of less to more important rooms which supplies a motive for domestic architecture. There does not seem to be much left for the architect to do. In fact, there is not much left for the "artchitect" to do. So he merely faces with stone the first or second story,

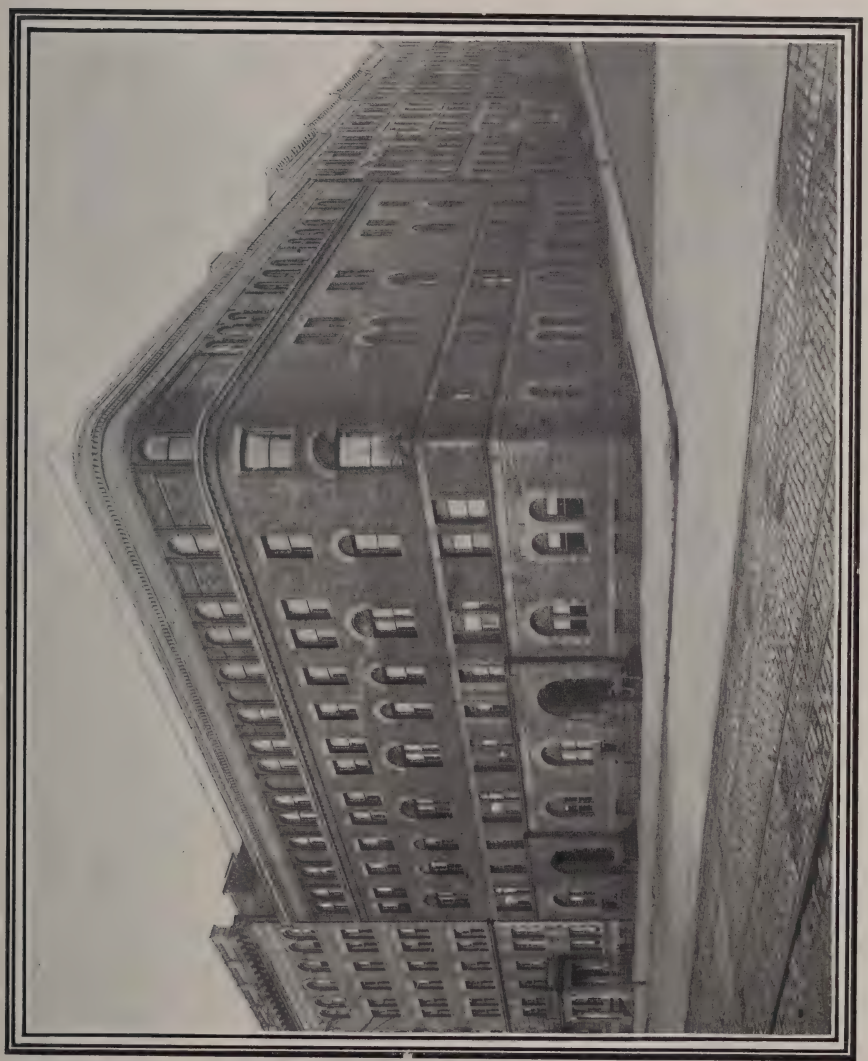


APARTMENT HOUSE.

Between 84th and 85th Streets, Central Park West, New York City.

protrudes a columned porch from each front door, crowns the edifice with an umbrageous cornice in sheet metal, and lets it go at that. One of these things makes you yawn. A mile of them gets on your nerves, and all the more when the designer undertakes to dissemble his mental vacuity by hunting for some new combination of material. "As you will, *mio caro*," old Bomba is reported to have said to young Bomba, when that aspiring prince changed the Neapolitan uniform from the Austrian white to the British red; "as you will, mio caro; dress them in white, dress them in red, they will always run away." The architect may bestow his tediousness in brick or stone of any color. It will grow only the more tedious for the "variety."

Let us look, in this panorama of platitude, for those things which do show an architectural intention. Here is one, between Eighty-fourth and Eighty-fifth streets, flanked, it will be observed, on one side by a bald "artchitectural" apartment house, of which the architectural calvity is accentuated by the attempt to dissemble it with the ridiculous toupée of the tiled and corbelled projection at the end, and on the other by an exceptional single dwelling. The central front has at least the air of having been designed by an architect, or let us say, merely designed. That is a distinction. It has a beginning, a middle, and an end, and a composition laterally as well as vertically. The detail too, is discreet and studied, and really, the modest front is one of the best designs visible on the Central Park West. We have to own that the building is a good story spoiled in the telling, and that the front looks much better in the photograph than in fact. There is so much variety in the design that there is need of none in the material. A monochrome, preferably of red, is clearly "indicated;" but in fact there are half a dozen colors not harmonized at all. The basement is of brown stone, with "binders" of a darker hue. This is very good in itself, and the mere expression that the wall is a construction and not a mere brown stone veneer, becomes an architectural nuance worthy of much more extensive adoption. But the superstructure is of tawny brick, with terra cotta wrought work of a darker tint, which is all very well in itself, but has nothing to do with the basement. Worse yet, the mullions of the bow-window and the panels at the center are apparently of so-called blue stone, which is here in fact green, which is a discord in color, and introduces another unmanageable element to that which had too many. Moreover, the story of arcaded openings over the three stories grouped under the tall arches, is much too much like the lintelled attic. Doubtless the front would have been better if the attic had been omitted, and the main cornice superposed upon the little arcades. And certainly it would



APARTMENT HOUSE.
Nos. 426 and 428 Central Park West, New York City.

have been better if the builder could have refrained, as evidently he couldn't, poor man, from crowning the edifice with an umbrageous sheet metal cornice, painted to match the terra cotta, and a sheet metal parapet painted to match the green stone, and neither of the slightest architectural interest. A good front has been marred by the use of heterogeneous material and vulgarized by a tin top.

Strange, the simple faith the builder shows in the impressiveness of this tin top, like the similar faith of a foolish and bald man in his wig, which he hopes his neighbors will believe in, though it does not deceive himself. Here, away up the avenue, is an apartment house (Nos. 426-428), in which there is certainly nothing else to resent, and it would be highly respectable but for that ridiculous wig. You may say that it is only inoffensive. But if you walk the length of Central Park West you will learn that mere inoffensiveness in an apartment house of the region is something to be grateful for. Look at it in conjunction with its neighbor to the left, which is a fair sample, and be thankful that this man did not continue that thing. Moreover, there has gone some real architectural thought to this simplicity. The main divisions are emphasized; and the baldness which would result from an absolutely uniform treatment is skilfully avoided by the arched tympana of the heads of the windows of the third story. The device is clever and effective by which the angle, left square for two stories, is rounded at the third, affording an architectural feature, as well as a commanding point of view to the inmates; and there is a grateful sense of walliness in the subordinate front on the side street. On the other hand, the arcade of the attic is not improved by the useless and incongruous pilasters flanking the openings, while it is distinctly injured by the tall sheet metal cornice, though even this is much less umbrageous than usual, as may be seen by comparing it with its neighbor, which is of the average monstrosity. Upon the whole, by dint mainly of mere simplicity and absence of pretension, in conjunction, to be sure, with some artistic sensibility and the power of expressing it, this very plain and straightforward edifice is one of the best things on the avenue, and shines by contrast with edifices upon the aspect of which several times as much money has been spent, but under the guidance of no more artistic motive than a desire to show that it has been spent.

For an example, to be sure an extreme one, of "fancy building," of a desire to make an architectural impression without an architectural motive, look at the two apartment houses on the corner of Eighty-eighth—"The Mohawk" and "The Minnewaska" are their noble names. The most striking feature about them is their



ARDSLEY HALL.

92d Street and Central Park West, New York City.



APARTMENT HOUSE, "THE TOWERS."

94th Street and Central Park West, New York City.

junction by means of the Siamese ligatures above the second and seventh stories. The New York slot is in any event a poor substitute for the Parisian court, and, except in the most liberally planned of the apartment houses, offers an insufficient provision of air, and a still more meagre supply of light. Architecturally, the fashion is not to treat it at all, but to line it with common brick and leave the back of it quite bald, with a struthious unconsciousness that it is visible from the street. But at least it is feasible and inexpensive to leave it alone as a slot. What good does it do to bridge it in two places, as is done in this case, and thereby wantonly direct attention to the ungainly lankiness of the two archways? Apart from this the present structure is noticeable for the treatment of the roofs, or rather of the attic. This has the singular air of having been designed for a Mansard, with dormers, and of having had the sloping and slated roof afterwards straightened to the vertical and built of stone in continuation of the wall. The innovation is not likely to be imitated. Conceivably, the dormers might be effective if they were relieved against a sloping roof. Certainly, they are absurd objects in their actual places and surroundings, and their absurdity is accentuated by the protusion of the chimneys. These might also be effective to animate the skyline of a peaked roof, but are worse than ineffectual where and as they are. And there is a culmination of absurdity and "fancy" in the roofed cages which enclose and crown the tops of the projecting bays.

The multiplication of bay windows, indeed, is one of the "notes" of the newer architecture of apartment houses in Central Park West. It is the most conspicuous fact about the "Ardsley Hall," at the corner of Ninety-second street, and also about "The Towers," so-called, at the corner of Ninety-fourth. Evidently the main advantage of the avenue for residential purposes, is the view it commands of the park from which it takes its name. And evidently the best disposition to command and enjoy this view is an unbroken flat front, which enables the inmates to look at once up and down and across upon the rural scene. The architect of "The Towers" has recognized this self evident truth by leaving flat his front on the park, and accumulating his "towers" on the street side. But the architect of Ardsley Hall has not been so well inspired, and has projected four full semicircles on Central Park West, whereby his tenants are confined to a slice at a time of the view which they would rather command from one aperture. The exterior effect to which the interior advantage is thus sacrificed would be worth some sacrifice to avoid. In each case the result is a central feature of a slot with two flanking towers, something like the gate house of a mediaeval keep. A very grim and gloomy slot



APARTMENT HOUSE.

88th Street and Central Park West, New York City.

it in each case is, being deep and dark and narrow, and its grimness and its gloom are enhanced by the portico that is meant to relieve them. The portico of the Ardsley is distinctly the worse, since the designer has had the unhappy thought of giving it importance by extending it through two stories, and has thus attenuated his order to an intolerable lankiness. The whole portico is, in sooth, a painful object, that shows a kind of genius for discordant proportion. The other is better, in so far as it is simpler, being a plain Doric tetrastyle of one story. But why any portico at all? No feature could go worse with these round and tower-like bay windows. And practically, the need of shelter at the entrance, which is the explanation of the "fancy" feature there, is not answered by a shelter which is only a canopy and exposes the waiter underneath to all the winds that blow and rains and snows that drive from the sides. How much more rational the porch protected at the sides as well as overhead of Nos. 348-349, which adjoins "The Towers" on the north, and which indeed is in general about the high-water mark of the recent architecture of the avenue. To be sure six stories are more manageable than eight. But there has gone some reason and study to the composition of this front, of which the disposition is judiciously emphasized by the changes of treatment from center to sides and of material from top to bottom. It is at least a design and it fairly shines by contrast with the higgledy-piggledy of "The Towers." It would not be fair to leave the Ardsley, poor thing as it is, without praising the architect, or, perhaps, still more the builder, for conspicuous common decency in denying himself the saving of a tin cornice, and, unless he has succeeded in deceiving the passer, carrying out his upperworks in honest masonry, and with the modest dimensions and projections which the use of honest masonry compels. It is refreshing to find something to praise in the architecture of Central Park West, refreshing and also difficult.

Franz K. Winkler.



OVER THE DRAUGHTING BOARD.

Opinions Official and Unofficial.

All, or almost all, artists in mosaic colored glass windows are free to confess that the beauty of their work is ofttimes greatly marred by the flesh painting, because of its flatness in conjunction with the roundness of their figures, and because of its artistic and technical inferiority in comparison with the mosaic proportions. They have struggled persistently against the first weakness, and in some cases with marked success, and where they have been successful it is owing to their having adopted a method, introduced by Mr. Louis C. Tiffany, of superimposing glass on glass. The steps in this process of work are as follows: The features are painted in a monotone upon a piece of colorless glass, cut to the form of the head and hands; over this is placed a colored piece, chosen for its flesh tone, and, if necessary, assisted with paint; and then a thin piece is placed over all, selected for its skin-like texture. In this way a satisfactory result is generally obtained, and all because the flesh is in harmony with the figures, which, it will be remembered, are clothed with deep-toned richly colored glass of variable thickness, having all the appearance of actuality.

A Difficulty and Its Solution.

The second weakness, the greater of the two, takes its rise in the fact that the artist of the window does not do the flesh painting himself, but entrusts it to the hands of some other person; thus abandoning the vital portion of his window to a "glass-painter," who is invariably a man of limited ability, generally a poor draughtsman, and always a slave to the traditions of the art in its application to stain-glass work, having no sympathy with the theory of work employed by mosaicists. What would be thought of a novelist, who was content with writing his title page, the heads of his chapters, and a line here and there, leaving the main portion of his novel to be filled by a clerk of his publishers? The idea in itself is an absurdity, and the result, without a doubt, would be a failure. If this is true of the novelist, it is also true of the artist in glass, for outside of his space and color composition, the flesh painting is the

most important factor in his window. It is in the flesh that he expresses his sentiment and tells his story—that is if his window is anything more than a study in color.

It would seem that the solution of the difficulty is plain, for the artist could, if he would, obviate and banish this weakness, as well as the former, from his window, by painting the flesh himself, and by adjusting the superimposing. Yet in actual practice he obstinately continues to turn over the flesh to be painted to a so-called artist in glass painting, and in this way allows the very life to be taken out of his work. Why? Because he mistrusts his own ability to paint upon glass; because he imagines it is a difficult process and one that takes a long while to master; because he listens to the jealous and idle talk of glass painters, who invariably attempt to shroud their methods of work in mystery, and guard the great secrets of their art from profane eyes. The truth is, the mystery is a figment of the glass-painter's mind, and "the secrets" of his art are as transparent as the glass he paints upon.

Of all the dependent and accessory arts, there is no one so simple, so easy to acquire, as that of the glass painter, more especially for a worker in oil. A few well directed experiments: testing the vitrifiable pigments by fire, the various color results singly and in union with one another, will put him in possession of all the fundamental knowledge he will require, while the perfection of technique will come almost before he knows it. Mr. Edward Simmons, who had never employed fusible colors, until he produced his Harvard memorial, succeeded in painting the flesh in this window in a most masterful way, and with little or no trouble; Miss Violet Oakley did the same thing in her All Angel windows; and the Misses Cowles, absolutely without previous instruction in glass painting, painted not only the flesh, but also many other parts of their interesting window, now in Grace Church, New York. This group of clever artists have pointed out the way to make a window truly the work of the artist in every point, except the parts that rightfully belong to the artist-artisan, and the mere mechanical portions.

The only obstacles of moment that stand in the way of making glass windows what they should be are the following: First, the one that comes from the commercialism of the window builder, viz., that it would materially increase the cost of the work if the artist painted it, as he would not paint the flesh for as low a price as a glass-painter. Moreover he would not be satisfied with imperfect results, and might paint it all over again, another possible addition to the cost. The second obstacle comes from the ignorance of the buyer of the window, from not understanding the importance of having the artist do his own painting, and a consequent unwil-

lingness on his part to pay a price which will cover this part of the work. The last obstacle comes from the artist himself, in not insisting upon being allowed to carry out his window from beginning to end, or from a lack of confidence in his own ability to execute the work.

These obstacles can be removed: the builder must be satisfied with a smaller profit, the buyer must be educated, and the artist must be bolder, and persistently insist upon having his artistic rights. The day for bad windows, commercial inanities, has gone by. The future is solely in the hands of the artists, and it behooves them to take advantage of their opportunity, before it is too late.

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American Country Life and Art.

About ten years ago or more, Americans decided that they were not taking enough interest in art, and since it is in the blood not consciously to submit to any limitation, they have ever since been zealously and pertinaciously repairing the deficiency. More recently they have decided that they do not take enough interest in the country, and now with perhaps even greater enthusiasm, they are preparing to make themselves more familiar with nature. Bird books are published by the score and sell as well as romantic novels. Books about all kinds of gardens are almost equally in demand, and a hot fight is on between the advocates of the formal and the so-called "natural" garden. Within the last six months two periodicals devoted to different aspects of country life have been started, and will, we hope, have a most prosperous existence. And so it goes, and will continue to go until another generation comes along, which will reap the fruits of all this effort, and will be able to take over simply and unconsciously what their parents have been obliged somewhat laboriously to acquire.

The decision on the part of young America to take an interest in the country, is one of the best of the many good decisions which young America has recently been taking. It will have many excellent results, among which not the least excellent will be a higher standard of orderliness and propriety in those necessary adaptations of the soil and the natural growth to human uses. No one who has spent much time, even in the earliest settled of our American country districts, can avoid noticing a lack of neatness and tidiness about such arrangements. The roads are generally badly made and badly kept in repair. The fences were built in a cheap and slovenly way in the beginning, now present a forlorn, neglected appearance. The sides of the road are overgrown with weeds, and except in the middle of villages, have been planted only by the haphazard methods of nature herself. The houses

situated near, altogether too near these roads, are arranged, for the most part, as if their owners had no idea that they were subjects of public inspection. The grounds are generally clean, but so bare, so entirely lacking in any attempt to conceal what is unsightly, and to make that which is necessarily conspicuous any more pleasant to the eye that they involuntarily suggest a corresponding bareness and emptiness in the lives of their occupants. A few old and straggling vines, an occasional lilac bush, and here and there a little border of flowers—that represents in many parts of New England the efforts of three or four generations of owners to enhance the seemliness of their surroundings. And this is the sad case with places, upon which, at one time or another, a good deal of money has been spent.

The trouble seems to be that in this country there has never been permanently attached to the soil, a class of people who had leisure, wealth, and something more than a common-school education. In the East the farmer has generally been obliged to lead a life of constant drudgery, with the result of rarely getting more than a bare living out of the soil. In the West, farming has frequently been more profitable, but it has not yet resulted in the settlement on the soil of any large number of leisured and cultivated people. The land has been worked too much in the speculative spirit, and its owners have not the impulse or the ambition to build up fine and permanent agricultural domains. In the South only has such an attempt been made upon a large scale, and since the war, the South has in this respect gone the way of the rest of the country. The consequence is that the standards of agricultural life have been, as a rule, narrow and utilitarian, and that even when a farmer did have a little leeway, he was under no social compulsion to use his surplus for the purpose of making his surroundings genial and pleasant.

The generous and handsome country places in the United States have, for the most part, been the creation of men who have made money in the cities, and who have bought and operated farms chiefly for their own diversion. But until recently this has never been done with a sufficiently serious purpose, or by a sufficiently large number of people to have any general or wholesome effect. The rich man, who likes to breed fast horses, raise fancy cattle and rare flowers, is the kind of rich man who deserves encouragement; but his personal relation to his farm is too occasional, and its operation is too independent of ordinary economic conditions to make his example pervasive and popularly interesting. It is necessary that a larger number of people should take a lively personal and local interest in the country before any general social results will follow, and it is something of this kind which now seems

to be taking place. The summer hotel is being supplemented by the country house. All over New England small settlements of city people are gathering; and these people, who are frequently possessed of only moderate means, take a much more intimate and dependent relation to their farms and gardens, than does the multi-millionaire. It is in the interest of these people that periodicals like "Country Life" and "House and Garden" are being published, and it is to them that must be entrusted the improvement of the outer aspects of agricultural America.

It will be a slow business, because the natives of New England regard these new-comers as intruders. Far from being dazzled by the "smartness" of their horses, and the comeliness of their houses and grounds, the New England farmer regards them with suspicion and alarm. He is both afraid of being crowded out, and resentful of any suggestion of social inferiority. Should the farmer's wife make a call, it is always a delicate question whether she be received in the kitchen or in the drawing-room, whether she consort with the "help" or the mistress. And the difficulty which ensues of finding any except a business basis of social intercourse is a difficulty which inevitably arises when people of widely varying standards are brought into ordinary social relations, and when those that cleave to the lower standards possess an admirable and justifiable sense of personal independence and self-respect. We have not raised this difficulty for the purpose of laying it, but only for the purpose of indicating how much must be done in the way of education, before any adequate social basis can be reached for a wholesome, permanent, and better behaved American country life. In the meantime, there is abundant cause for satisfaction in what seems to be the increased interest in the soil and its products by large numbers of comparatively well-to-do and well-informed people. The good effects which will probably be felt in all departments of American art, but particularly in architecture can scarcely be overestimated.

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The Young Barbarians at Play.

Perhaps the greatest spectacular events of modern American life are the more important intercollegiate foot-ball games. There is certainly no other sport, or no other occasions upon which great numbers of Americans gather together, which affords such intense exhilaration of feeling and such a combination of lively, yet imposing impressions. And yet with that unfortunate combination between pleasure and ugliness which seems inevitable in American popular diversions, the actual architectural surroundings of these games are in every case deplorably uninteresting. The ap-

proaches to the foot-ball field are generally narrow, inconvenient and even sordid. When the field itself is reached one finds, as a rule, merely a wooden fence with an insufficient number of gates leading to an amphitheatre of metal or wooden seats. No attempt is made to enclose the back side of these structures. The beams and columns stand exposed to public view in all their gaunt nakedness and confusion. No attempt is made to lead up to the main entrance appropriately or attractively. In short, there is a complete absence of any effort to make the appearance of the field a bit better than that of any schoolboys' base-ball club. Yet when one enters the amphitheatre, bad as the arrangements are from an æsthetic point of view, what may be called the natural proportions of the structure are not bad, and the effect, when the benches are full and the flags waving is extraordinarily impressive.

However slow the college authorities may be in appreciating the desirability of making university athletic playgrounds as attractive and impressive as the contests which they accommodate, deserve, it is interesting that the architectural problem involved is receiving attention from the good architects. One of the most noteworthy experiments at the Buffalo Fair was the Stadium, which was designed by Mr. Walter Cook, not only for foot-ball games, but for all kinds of athletic contests. The structure was decidedly experimental and was particularly defective in its treatment of the two ends of the amphitheatre; but it had some effective proportions, and will surely assist other architects in their subsequent treatment of the same problem. An idea of this kind is very contagious among Americans. Of course, St. Louis is to have a Stadium also, and still another is to be built on the grounds of Chicago University for the international Olympian games in 1904. Since these, however, will be only temporary structures, it is more significant that Harvard seems to have taken the same idea. For several years past the athletic committee has been coöperating with the Metropolitan Park Commission in making extensive improvements on Soldiers' Field, planned not merely to make the Field more useful and healthy, but also to improve its appearance. More important for our present purpose is the fact that a design for new seats has also been prepared, which is described as an "engineering structure of steel covered by concrete." This does not sound very attractive, but it is something to have the steel structure covered at all; and the result may be safely left in the hands of Mr. McKim, the architect. What Harvard has begun the other colleges will imitate, until ten or fifteen years from now the young American barbarians may play in surroundings that will give distinction, even to the roughest sports.

Certainly it is very desirable that Americans should have their liveliest pleasures associated with æthetically interesting surroundings. For the business of æsthetic improvement is, as a rule, a very serious business in this country, and higher standards and good examples have to be imposed upon the public, very much as the doctor imposes his pills. People do not enjoy them, but being told that they are salutary they are accepted. As a part of this process the recent change of official heart in Washington is very encouraging, resulting as it has in the selection of very good designs for the new Agricultural Building, and an admirable Commission to supervise a necessary revision of the park plan of the city. For unless the government architecture and architectural arrangements are educational, the effects of private individuals must be in large measure unavailing. Yet more important than any educational official architecture is an enhancement of the æsthetic value of the surroundings of people, who are merely out for a good time; and consequently any step in the direction of making the great spectacular athletic contests of the year a beautiful as well as an exhilarating sight will do more to popularize better æsthetic standards than a vast quantity of good official architecture.



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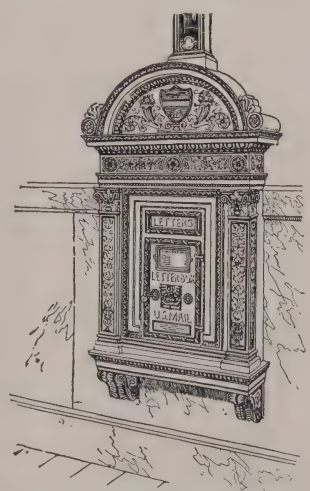
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THE WORKS OF ERNEST FLAGG.

INTRODUCTION.

THE first building that brought Mr. Flagg into prominence was the new St Luke's Hospital, on Morningside Heights, in New York City. Roughly speaking that is an affair of a decade ago.

Rarely has an architect been so fortunate as to make his debut upon so monumental a stage, and a student of architectural history might be piqued to inquire whether this unusual opportunity was not merely a gift of chance, were he not estopped by the architectural worth of the building itself, and by the rapid professional successes that followed it, won by its author in a series of works, which in volume at least, represents a marked achievement even in these days of big "architectural plants," and large "outputs."

Omitting for a moment the "personal factor," the explanation of both the initial opportunity and the subsequent success is to be found in the fact that Mr. Flagg brought to his task a very thorough preparation obtained at the École des Beaux Arts. Mr. Flagg was fortunate in that he brought that particular training to this country at that particular moment, thus joining a small coterie of architects possessed of a professional equipment similar to his own—men of "the School" whose work in the beginning of the "Nineties" was coming into style, that is coming to possess high commercial value.

Our architecture at that moment was in a transitional condition. The "Romanesque Movement" derived from Richardson, was running feebly to its impotent conclusion. It was in its very

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Entered as "Second-Class Matter" in the Post Office in New York, N. Y.

last stage. Practitioners were struggling to throw off the heavy archaic handwriting they had so laboriously acquired during the preceding decade and over, and in the main were turning for novelty to the "classic" of Rome and to the Renaissance. It is interesting now from an historical point of view to study designs like that of Post's Havemeyer Building on Cortlandt Street, or R. H. Robertson's Corn Exchange Bank, to see the new tendency and the old habit struggling one with the other. The new Netherlands Hotel, the Metropolitan Telephone Building, the Mutual Reserve Building were recent expressions of an expiring faith, whereas from designs such as those of the Bowery Savings Bank, the Waldorf Hotel, the "Mail and Express" Building, the Herter residence, the John Jacob Astor residence, we obtain some idea of the many directions in which novelty was sought.

The conditions of modern architecture do not permit or at least do not favor a general style and the Romanesque movement even at its height was signalized not only by the number of its adherents, but by the contrasting achievements of the nonconformists. But although we cannot hope for a commonly accepted style, there is always observable a tendency towards some centre of design, and in the early "Nineties" when Mr. Flagg entered practice he was extremely fortunate in bringing with him those particular architectural ideas that were destined in the next ten years to attract the profession, catch the public eye and become the basis of the latest "current style." Others before Mr. Flagg had enjoyed the benefits of the École des Beaux Arts training, but as was the case with the elder Hunt and with Richardson this training was merely their schooling, and in much of the work of the former and in still more of the work of the latter, one might easily miss all trace of the Parisian academic training. In Mr. Flagg's case, however, as in the cases of a few other "Beaux Artists" the importation is obvious. No one, not even the man in the street, can possibly mistake, say, the Scribner Building or the Singer Building, for anything but Parisian in general form and spirit, and even in such cases as, let us say, the homelike Clarke residence on Riverside Drive, New York City, or the splendid buildings for the Naval Academy, at Annapolis, Maryland, no one at all instructed

would hesitate for a moment in saying that, despite a foreign accent, such things speak French very well.

It must not be imagined that in describing as "importation" the ideas and training underlying this work, there is any intention to disparage. Those ideas and that training are technically considered the best the world to-day affords. They have a vitality and reality quite unmatched. If there be a distinctly modern style of value as fine art it is the French, however much one may be inclined to quarrel with it. In turning from the Romanesque and the Classic to Modern French, American architects directed their thoughts, at any rate, from the dead to the living, from a style archaic and obsolete that had entirely passed from the world with the conditions that produced it, to a style "foreign" it may be, but alive, producing its examples and capable of contemporary explanation.

Of course, fictitious in a sense, the modern French style must always be for our architects, or at any rate, for all who, unlike Mr. Flagg, have not acquired it as their vernacular. And despite the vast amount of work produced in it lately, little is at all vernacular. Probably none has more of the native spirit than Mr. Flagg's. With him it is not the French of Stratford-atte-Bow. Herein, no doubt, we have another reason for his rapid success or vogue, for clearly at a time and in a "movement" when all are imitating and most imitating badly, the artist who draws, so to speak, "from the source," possesses a distinct advantage.

But neither the timeliness of Mr. Flagg's advent nor the "authenticity" of his product in the midst of a widespread imitative movement accounts for the high position he has attained in the ranks of his profession. The designs of few men in the country are more sought for and studied professionally than are Mr. Flagg's. This interest is, perhaps, livelier with men of the rising generation than with the older architects, and the basis of this interest lies in the fact that Mr. Flagg's designs are, if one may say so, so thoroughly professional or technical, have been so obviously arrived at by a special trained process of thought, and are expressed in a manner so thoroughly grammatical and educated. His work is indubitably the work of a

man who has thoroughly accepted certain well-defined principles from which he proceeds logically. There is nothing obscure, slipshod, unformulated; no groping, no obvious experimentation. The result is work wherein everything seems definitely and purposely "placed," and the building, as you study it, clearly "declares itself." One may or may not like the building, one may prefer something more structural, or something more picturesque, but there is no denying that the building before one, such as it is, has been deliberately "done," is organic and logical and represents a clear process of architectural thought and not a number of loose reminiscences forced together in some way onto paper. And there is something very admirable, and, let us add, very French, in this clearness. There is very little work in this country that is so architectural or will stand so well technical analysis as Mr. Flagg's. We say technical analysis advisedly, because in many cases the excellences are more of a technical and formal character than of an imaginative order; much more likely to excite admiration from the educated than from the popular critic.

We hope no one will derive from this any idea that Mr. Flagg's work is "caviare to the general." The intention is to point out one of its distinctive excellences. As a matter of fact, no style to-day is quite so "taking" with the crowd as the modern French. Its very defects are of the sort that attract the public, and Mr. Flagg's buildings do not seem to miss popular appreciation, because they are technically excellent as well as French. But then popular admiration of a design rarely reaches what is really architecture.

Finally, we ought to qualify what we have already said by pointing out that Mr. Flagg is not always French. Witness the F. K. Bourne residence, the admirable Lawrence Library, and his own country place on Staten Island. These show that his thoughts are free enough in other styles, but even here we may notice the same good qualities of design that distinguish his Parisian mode —logical clearness, freedom from eccentricity and all those irritating marks of the uneducated pencil.

H. W. Desmond.

ILLUSTRATIONS

AND

DESCRIPTIONS

OF THE

CHIEF WORKS

OF

ERNEST FLAGG



PROPOSED NAVAL ARCH FOR NEW YORK CITY.

This triumphal arch, the photograph of which was taken from the model, is intended to serve as an entrance gateway to the city, the project contemplating its erection at the Battery.



FIG. 2. DETAIL OF THE MAIN ENTRANCE, DOORWAY OF THE CORCORAN GALLERY OF ART. WASHINGTON, D. C.

This illustration shows the bronze doors and clathri of the windows. The door opening is about ten feet wide and somewhat over twenty feet high. The bronze lions, which do not harmonize very well with the design, are copies of those by Carnova in St. Peters, Rome, and were in possession of the trustees before the building was built. It is hoped that in time the design may be completed by placing allegorical figures on the pedestals at the side of the doorway. The inscription in the frieze, "Dedicated to Art," was the same as that on the old building of the gallery at the corner of 17th street and Pennsylvania avenue.



FIG. 3. VIEW OF THE SEVENTEENTH STREET FACADE, CORCORAN GALLERY OF ART. WASHINGTON, D. C.

This view is taken from what is known as the White lot, just to the south of the State, War and Navy Buildings.

The basement is of a warm shade of granite, and the superstructure is of selected Georgia marble of the most beautiful workmanship. The roofs are almost entirely of glass, in copper frames.

The scale of the building is somewhat deceptive, for the lower story is 20 feet high, and the windows, which appear rather small, are in reality quite large. The greater part of the second story is unpierced by windows, though there is a frieze of square openings having marble claustra below the main entablature. These openings admit of a free circulation of air, in summer, across the principal galleries. This facade is surmounted by a rich entablature. The frieze is inscribed with the names of distinguished artists of all times and nations. The cornice supports a carved marble cheneau of a bold and rich design.

The cost of the building was about $500,000, which seems very low when its size and the excellence of the workmanship are considered.



FIG. 4. MAIN STAIRWAY OF CORCORAN GALLERY OF ART. WASHINGTON, D. C.

This stairway is directly opposite the main entrance, at the other side of the atrium. The steps are of marble, about sixteen feet wide, each in a single piece. The large blocks at the side are intended for decoration or sculpture. There is a broad landing half way up where the stairs turn on themselves. The balustrades and walls of the cage are of limestone. The stairway is lighted from above, and though simple in design, it produces a fine effect as seen upon entering the building.



FIG. 5. VIEW OF THE CENTRAL STATUARY HALL OR ATRIUM OF THE CORCORAN GALLERY OF ART. WASHINGTON, D. C.

This apartment is somewhat over fifty feet wide and about one hundred and fifty feet long. The columns, which are about eighteen feet high, are of Indiana limestore. The Ionic columns of the second tier have a necking of gilt bronze. The hall is well lighted by an enormous skylight.

The picture galleries open from the galleries of the second floor. These galleries are about ten feet wide, the picture galleries are about thirty feet wide, and are well lighted. It was unfortunate that the glass ceiling of the atrium was not elevated by about ten feet, which might easily have been done. This change might be made now at a trifling expense. The great defect of the hall is an appearance of lowness when seen from the second floor.

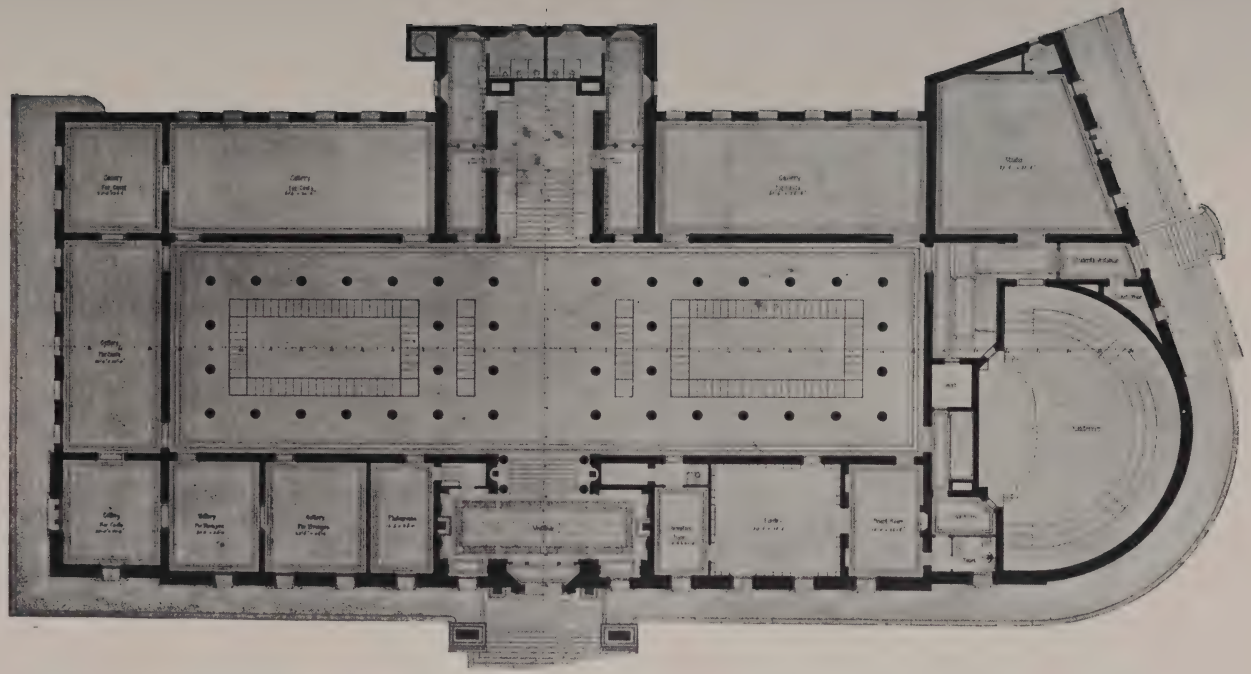


FIG. 6. PLAN OF THE GROUND FLOOR OF THE CORCORAN GALLERY OF ART, WASHINGTON, D. C.

The building occupies the whole front of the block on 17th street, between New York avenue and E street, overlooking the grounds of the White House. It is about 260 feet long, and something over 100 feet wide. Only about one-half of the plot owned by the gallery is occupied, and provision has been made for future extension. The main entrance is in the center of the 17th street front. The lower floor contains a large central hall or atrium, the library, board room and offices of the administration, a lecture hall in the form of a hemicycle, studio and a number of exhibition rooms.

On the second floor there are galleries about the central hall, while these in turn are surrounded by the main picture galleries. There are also on this floor several studios for the schools.

The students' entrance is on New York avenue, and a separate staircase in this part of the building is for the use of the schools. The lecture hall is a noble apartment, extending through both stories.

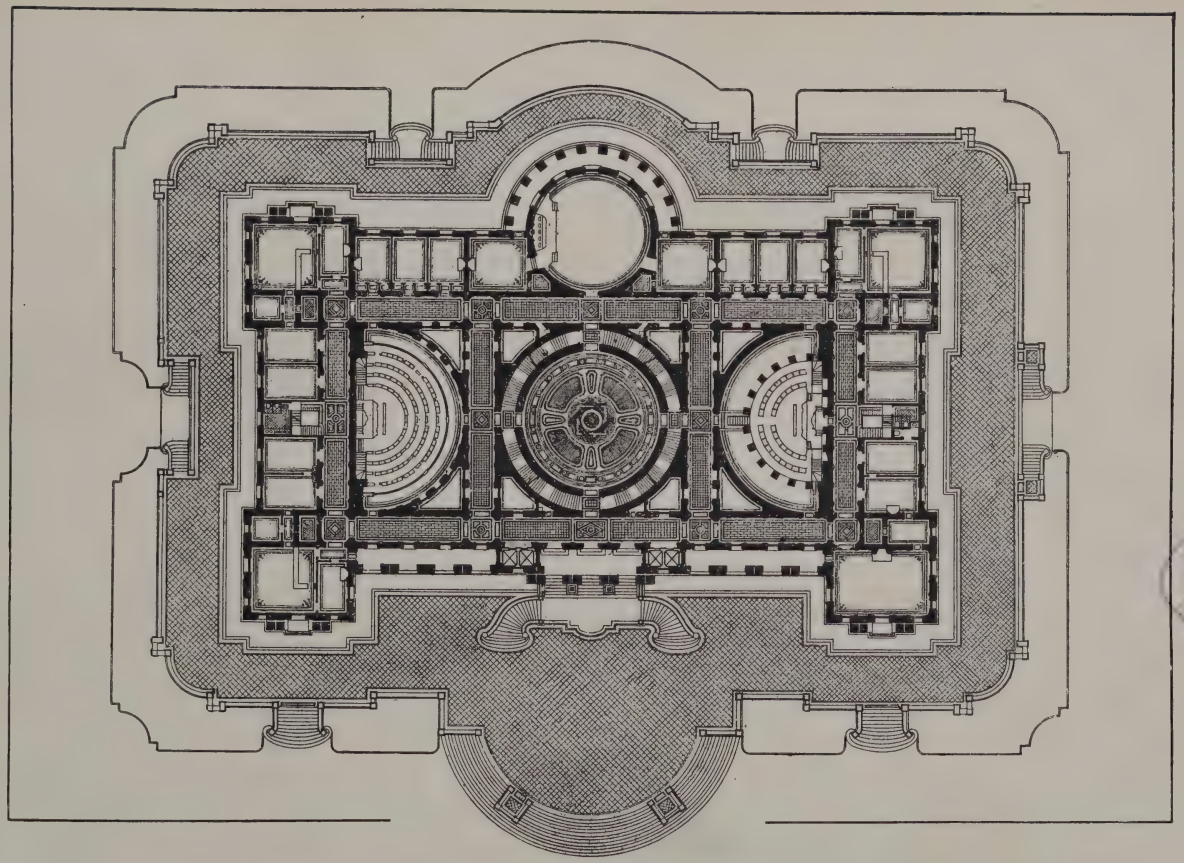


FIG. 7. GROUND FLOOR PLAN OF THE WASHINGTON STATE CAPITOL AT OLYMPIA, WASHINGTON.

The central rotunda is sixty feet wide on the ground floor. The main stairway, in four flights, is between the inner and outer walls. On the second floor a colonnade stands on the inner wall and the openings between the columns add to the spacious appearance of the apartment. The Senate Chamber and Hall of the Representatives are each semi-circular in plan and are separated from the rotunda by transverse corridors. Other transverse corridors or lobbies separate these apartments from the committee rooms. The Governor's and Lieutenant-Governor's rooms are in the angle pavilions of the south facade. The Supreme Court occupies a circular room to the north of the rotunda.

The estimated cost of the completed building is $1,000,000.



FIG. 8. GENERAL VIEW OF THE WASHINGTON (OLYMPIA) STATE CAPITOL FROM THE SOUTH.

Since this preliminary sketch was made the design has been improved by moving the solid bays close up to the central portico one thus extending the length of the two loggias. The building occupies a very commanding site on a bluff at the head of Puget Sound, and will be in full view for miles as one approaches the city by water.

The material used is a local sandstone, of a very good quality, but too dark in color for the best effect. The dome is entirely of masonry.

The designs for this building were secured as a result of a competition in which two hundred architects participated.

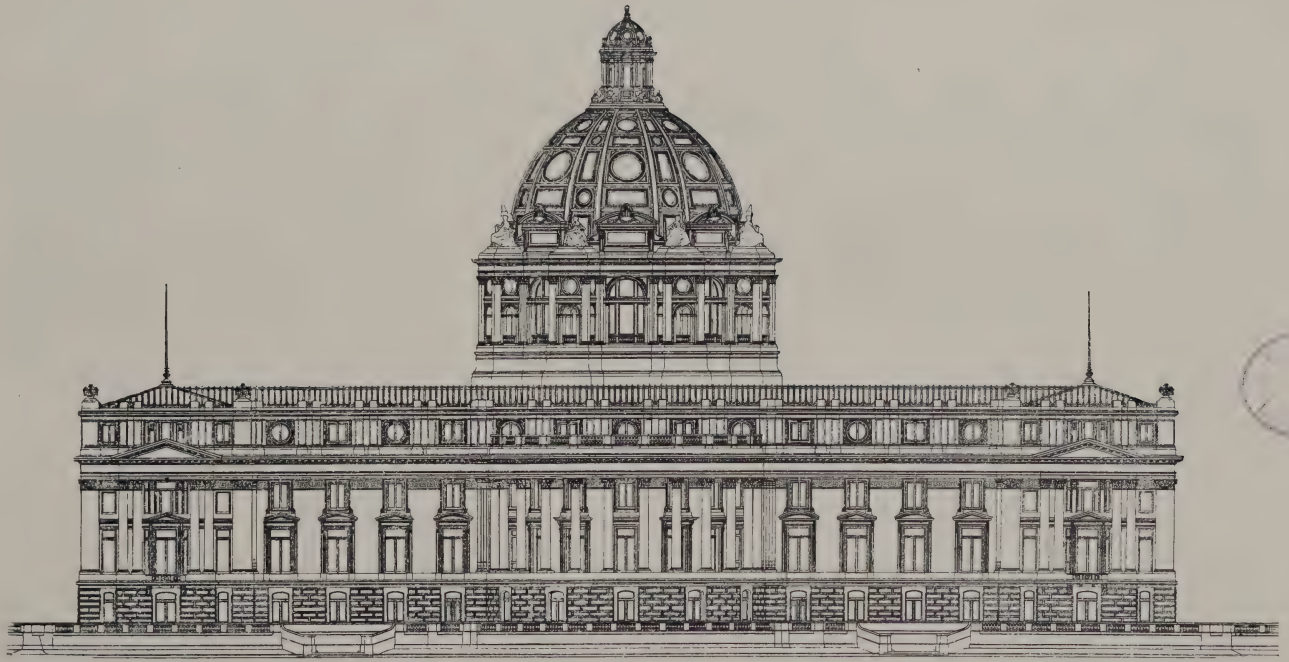


FIG. 9. NORTH ELEVATION OF THE WASHINGTON (OLYMPIA) STATE CAPITOL.

This is the side which can be seen from the water. The Supreme Court Chamber occupies the semi-circular projection, which is surrounded by a colonnade. The boldness of this projection and the shade of the colonnade it is hoped will do much to compensate for the lack of sunshine on this facade.

There is a small strip of property between the Capitol grounds and the edge of the bluff. As this could be bought for very little, a bill was introduced in the Legislature making the necessary appropriation, so that the view of the building from the water might always be unobstructed. It is reported that when it came to the Senate committee, the chairman said, "Oh, hell! We ain't buying scenery," and the measure was killed. Perhaps a subsequent Legislature may take a different view of the matter, but the price of the scenery will probably be advanced in the meantime.

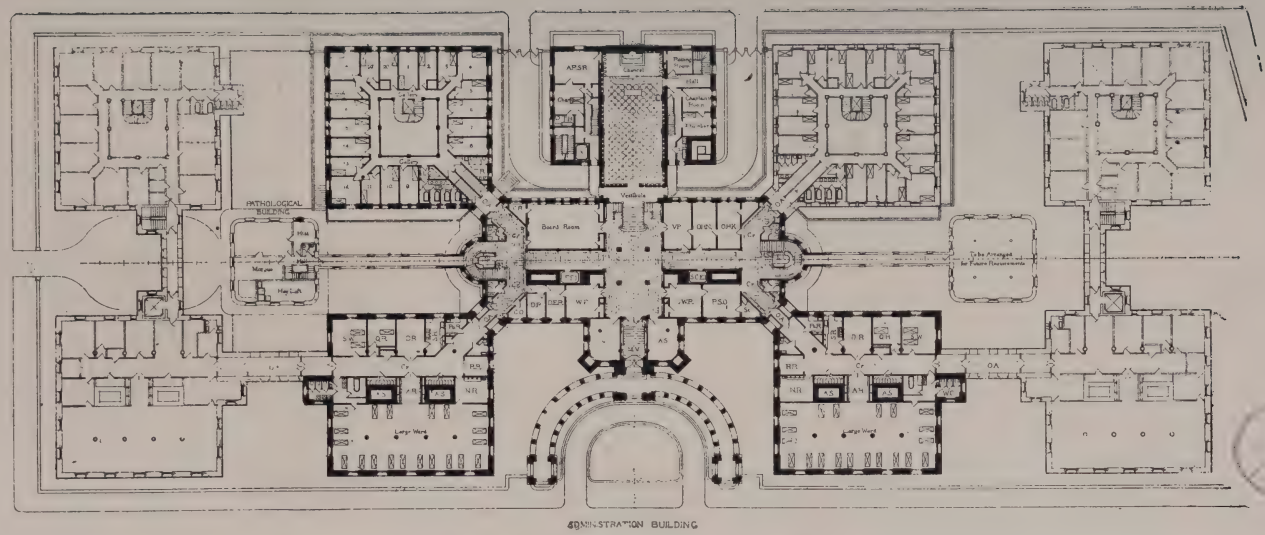


FIG. 10. GROUND FLOOR PLAN OF ST. LUKE'S HOSPITAL, CATHEDRAL HEIGHTS, NEW YORK CITY.

When completed, the hospital will consist of a group of ten pavilions, of which five have been built at the present time. The walls of the part which is completed are in black on the plan.

The main entrance is in the base of the tower in the center of the south facade of the administration building. From the vestibule one enters a large central hall, from which a broad flight of marble steps leads to the chapel, which is separated from the hall by a glass screen. A longitudinal corridor in the administration building leads to the two main staircases, one at either end of the pavilion; near these staircases, corridors radiate to the outlying pavilions. The pavilions on the south side, facing on 113th street, and overloking the cathedral grounds, contain the wards. The two pavilions which are nearest the chapel pavilion are entirely devoted to the housing of the nurses and employees. The corner pavilions on 114th street are for private patients.

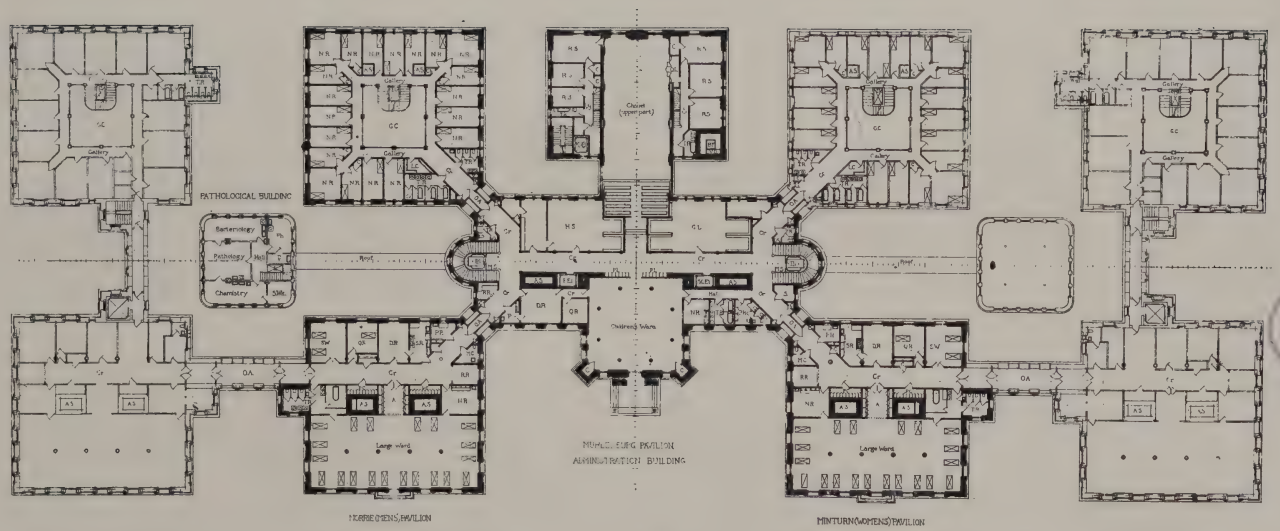


FIG. 11. SECOND FLOOR PLAN OF ST. LUKE'S HOSPITAL, CATHEDRAL HEIGHTS, NEW YORK CITY.

The planning of this hospital was a problem of great interest and considerable difficulty, and one which is frequently encountered when such institutions are located on valuable land in cities. This problem is: How can land which is immensely valuable be made to accommodate a large number of patients, and at the same time comply with those sanitary laws which require no overcrowding for the sick, the supply of an abundance of light, air and sunshine in every part, and the possibility of isolating any part from the rest to avoid the spread of contagion? This plan shows how the solution was sought in this case. The ward pavilions contain no staircases or shafts connecting the various floors by which air could circulate from one floor to another, but the wards are easily reached on every floor from the administration building; the links which connect the various pavilions to each other are so many fresh air cut-offs, having open arches on each side through which fresh air can freely circulate; as every ward with its dependencies occupies an entire floor of a pavilion, the air can thus circulate around all sides of each; as the whole southern exposure is devoted to the wards, the sun enters through some of the windows during all hours of the day.

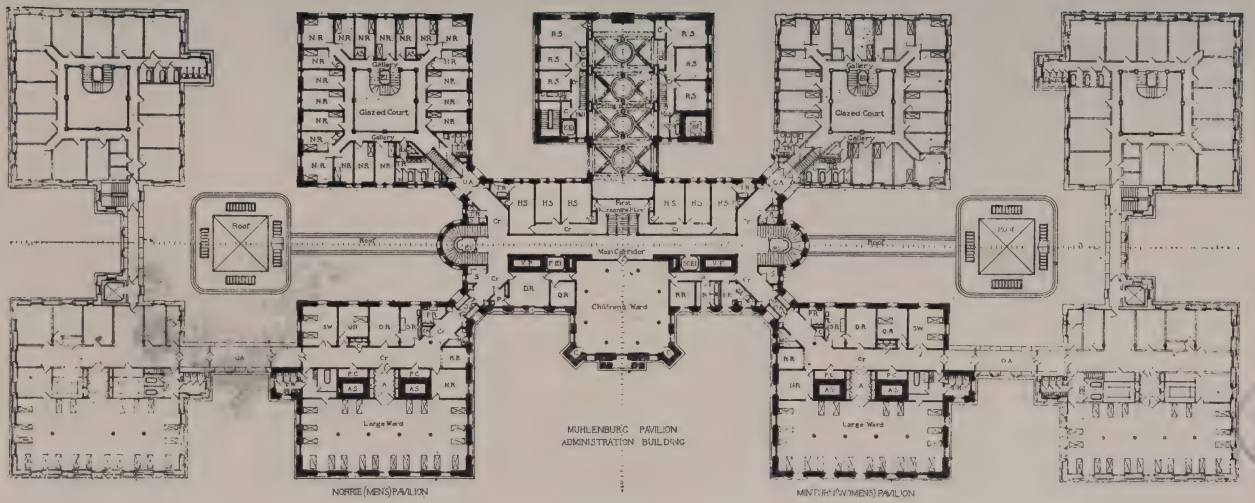


FIG. 12. THIRD FLOOR PLAN OF ST. LUKE'S HOSPITAL, CATHEDRAL HEIGHTS, NEW YORK CITY.

It will be seen by the plan that each of the ward pavilions contains two large ventilating flues near the center; these flues are provided with electric fans at the top, which exhaust the air from openings near the floor in winter and from other openings near the ceiling in summer. Fresh air is admitted from openings under the windows connecting with radiators which heat it, and the whole apparatus is automatically controlled by thermostats so perfectly regulated that one of the nurses unacquainted with the working of the system complained to the superintendent that the thermometers of the wards must be out of order, for she had looked at them a hundred times and they always registered exactly the same degree of heat.

In the two employees' pavilions there is a central court about 30 feet square, glazed above, with galleries at every floor, which give access to the rooms. The kitchen is located on the fourth floor of the chapel pavilion, and from it food is sent in covered carts to all the dining rooms.



FIG. 13. ELEVATION OF ST. LUKE'S HOSPITAL ON 113TH STREET, NEW YORK CITY.

This elevation shows the building as it will appear when completed. The basement is of granite, and the first story window dressings, quoins, main cornice and upper part of tower are of white Georgia marble. The plain surfaces are of light brick. The roofs are of red slate and copper.

Here are seen the open arcades connecting the ward pavilions. The small turrets in the angles contain the water closets. The large ventilating stacks are seen above the roofs. The total length of the facade is about 500 feet. Each of the ward pavilions is 76 feet wide; the stories are 18 feet high, from floor to floor.



FIG. 14. THE END ELEVATION OF ST. LUKE'S HOSPITAL, OVERLOOKING MORNINGSIDE PARK, NEW YORK CITY.

The building is superbly placed on an eminence about eighty feet high, overlooking the city to the east. As the park is on this side, the view of the building can never be obstructed. On the south side, the cathedral has unfortunately been placed close to the hospital, on the extreme northerly side of its grounds, and both buildings will be greatly injured thereby. This is the more to be regretted, as the grounds of the cathedral were sufficient to have allowed of a liberal open space between the two buildings.



FIG. 15. VIEW OF ST. LUKE'S HOSPITAL FROM THE CATHEDRAL GROUNDS, NEW YORK CITY.

This illustration shows the Muhlenburg Pavilion or Administration Building at the back of the court recessed from the street. The Minturn Pavilion on the right and the Norrie Pavilion on the left. The other two completed pavilions are back of these. The cost of the five pavilions which have been completed was about $1,300,000.



FIG. 16. VIEW OF ST. LUKE'S HOSPITAL FROM COLUMBIA UNIVERSITY, NEW YORK CITY.

This picturesque view is already injured by buildings which have been erected since it was taken. It would be fortunate if the block opposite the university could be kept open as a small park. When the five remaining pavilions of the hospital are built the appearance of the building from this point of view, as from every other, will be greatly improved.



FIG. 17. SKETCH OF THE TOWER FROM THE MINTURN PAVILION, ST. LUKE'S HOSPITAL, NEW YORK CITY.

All the work above the main cornice, including the cross which surmounts the lantern, is of marble, excepting the panels of the dome, which are of light brick.

The main operating room of the hospital is under the dome. The surgical department and wards occupy the entire fifth floor.



FIG. 18. VIEW OF THE INTERIOR OF THE CHAPEL OF ST. LUKE'S HOSPITAL FROM THE GALLERY AT THE REAR.

The chapel is about 75 feet long, 30 feet wide and 36 feet high. It is lighted by a large stained glass window at the north end and by two large windows at either side of the southerly end. The reredos, altar and tracery of the great window are of marble, as is also the pavement. The vault is of concrete, ornamented with relief work in stucco. The arcade between the main piers is of carved oak, as is also the organ case and the furniture. The chairs are movable. The central panel of the great window represents the "Healing of Nations," one side panel the "Curing of the Body," and the other the "Saving of the Soul." The circular medallions in the tracery represent the "Seven Healing Works of Mercy."



FIG. 19. INTERIOR OF ONE OF THE WARDS OF ST. LUKE'S HOSPITAL, NEW YORK CITY.

This ward is in what is called the Minturn Pavilion, which is entirely occupied by the wards for women. Each ward is about 75 feet long, 30 feet wide and 17 feet high, and contains 20 beds. There is an unusually large allowance of cubic space per patient, and the air supply is so great that five or six thousand cubic feet of air is supplied per patient per hour.

The dependencies of each ward consist of an ante-room containing cases for bandages and implements used in the ward, a nurses' room, ward dining room, pantry and diet kitchen, small reception room for patients' friends, a quiet room, small ward of two beds for special cases, the toilet rooms and bath rooms. The ward proper is separated from the dependencies by a corridor having a window at either end.

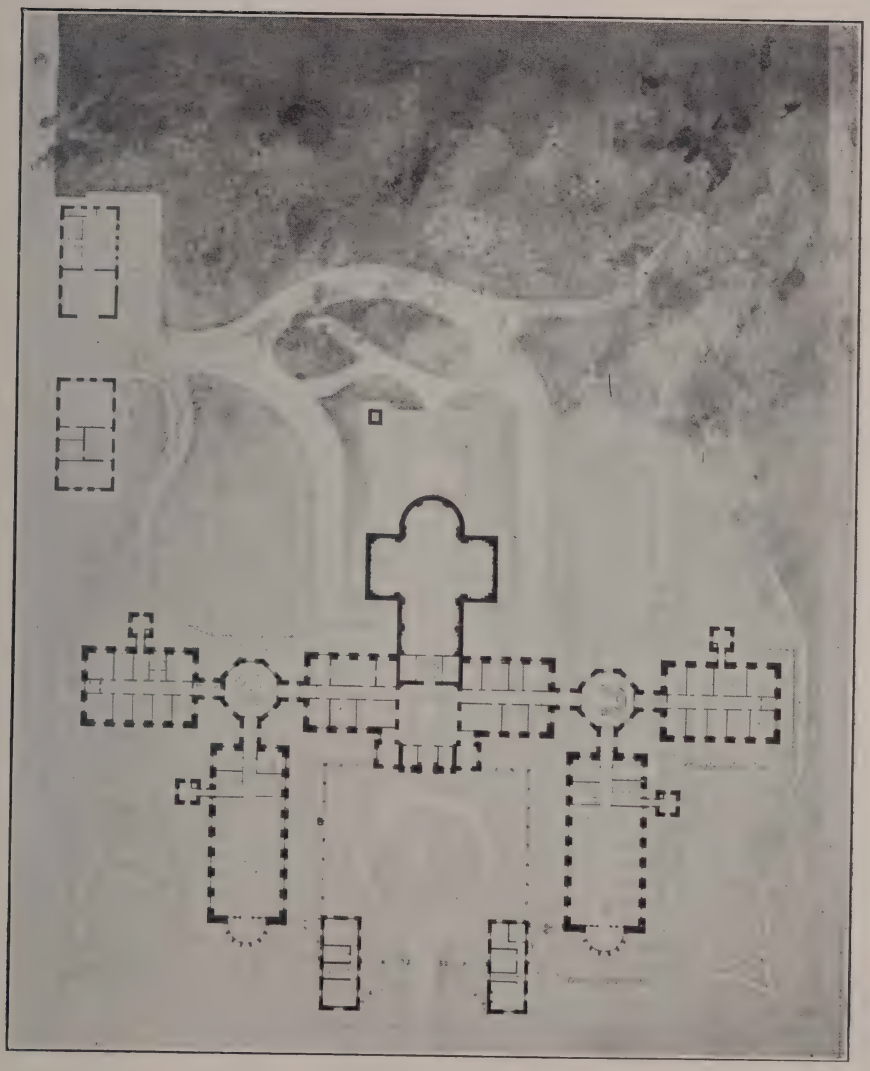


FIG. 20. PLAN OF ST. MARGARET MEMORIAL HOSPITAL, PITTSBURG, PA.

This plan is of a different type from St. Luke's, New York. In this case, there is an abundance of comparatively inexpensive land. The administration building is in the center of the group. The private patients' pavilion is to the right of it, and the nurses' pavilion to the left of it, both on the same axis. Two ward pavilions project at right angles from this central line on one side and the chapel on the other. Provision is made for two more ward pavilions on the side with the chapel. The two staircases and elevators are each in a separate octagonal construction, conveniently placed for all the buildings, but separated from all by fresh air cut-offs. Like St. Luke's Hospital, the wards have light on three sides, but in this case the windows are in the two long sides and one end, while in the other the windows are in one long side and two ends. Every pavilion can be completely isolated from the rest, and the air can circulate freely around each. The ward dependencies are much less extensive than at St. Luke's. The water closets are placed in detached turrets at the side of the ward pavilions.



FIG. 21. ELEVATION OF ST. MARGARET MEMORIAL HOSPITAL, PITTSBURG, PA.

The building is constructed of red brick and a light sandstone. The roofs are of red tile. The total length of the main facade is about 320 feet, and the cost was in the neighborhood of $350.000.

The semi-circular bays at the ends of the ward pavilions serve as solaria, one for each ward. The operating department is on the second floor of the administration building. The out-patients department occupies the lower floor of the ward pavilion to the left. The enclosed courtyard in front of the administration building and between the ward pavilions is about 125 feet square. The hospital as it now stands contains beds for 85 patients; when the two additional ward pavilions are completed, 50 beds will be added.

The hospital, with its endowment, was a gift of the late John Haley Shoenberg, of Pittsburg.



FIG. 22. INTERIOR OF THE CHAPEL OF ST. MARGARET MEMORIAL HOSPITAL, PITTSBURG, PA.

The chapel is cruciform in plan, the sanctuary being in the form of an apse. The extreme height is 82 feet and the extreme breadth across the transepts is 52 feet. The organ occupies a gallery in the north transept, and there is another gallery at the end of the nave, which can be entered from the second floor of the administration building. This is to accommodate the sick on the second floor, who can thus attend the services without going down stairs. The vault is made of concrete, with relief ornament in plaster. The woodwork and furniture are of quartered oak. As at St. Luke's Hospital, New York City, the interior of the chapel can be seen from the entrance hall, and is very effective.

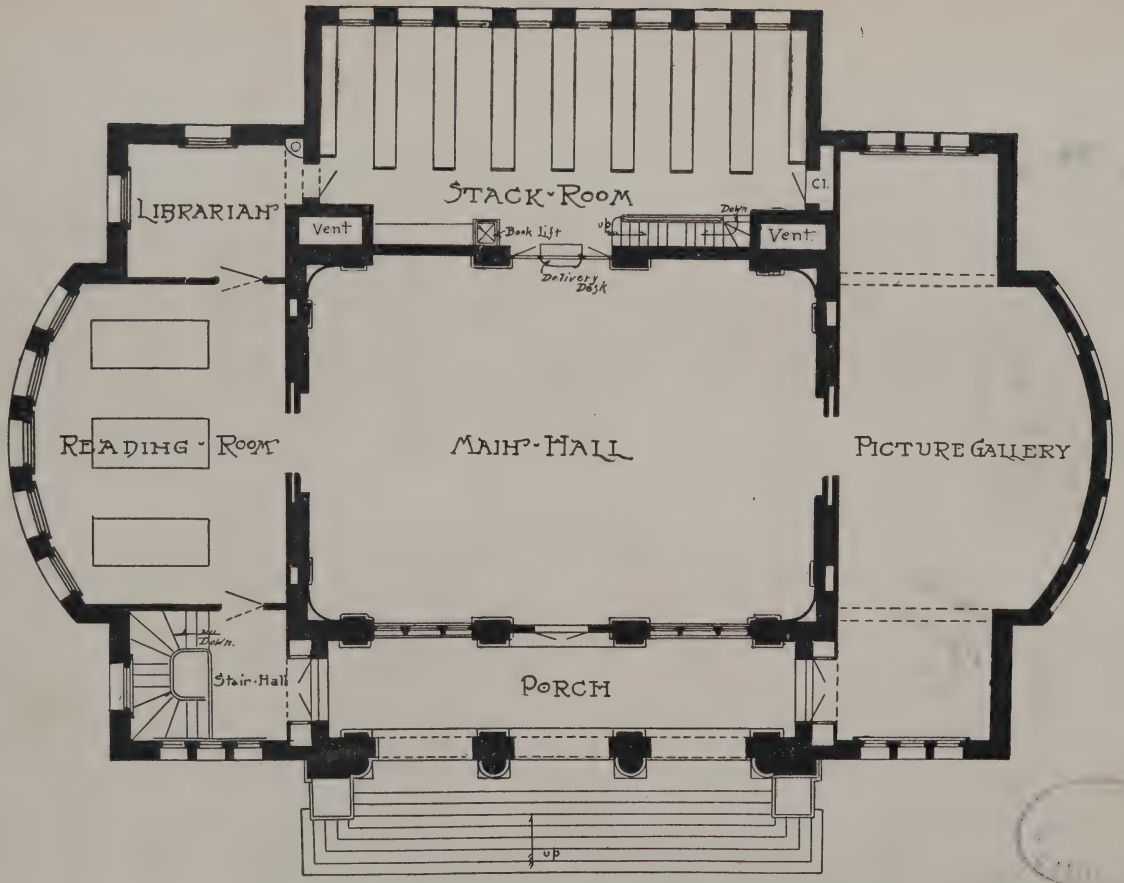


FIG. 23. PLAN OF THE LAWRENCE LIBRARY, PEPPERELL, MASS.
Ernest Flagg and W. B. Chambers, Architects.

This plan needs very little explanation. The main hall serves both as a reading room and as a distributing room. The delivery desk directly opposite the entrance permits the clerk to keep a general oversight over the whole interior and to see all who enter or leave the building.

The stack room is arranged in three tiers, and there is accommodation for about 50,000 books.

The picture gallery on the left of the main hall is an interesting feature of the plan.

The building has a very thorough system of ventilation, which is operated by the waste heat from the smoke pipes of the heating apparatus.



FIG. 24. GENERAL VIEW OF THE LAWRENCE LIBRARY, PEPPERELL, MASS.
Ernest Flagg and W. B. Chambers, Architects.

The design is simply a clothing of the plan. All the divisions of the interior are clearly indicated on the exterior. There is a stone loggia, the central hall, the wings, including the stack room, all expressive of the purpose for which they are used. So also in the use of material, it was the endeavor to give to each kind used its appropriate form and its proper function. Everything used was the best of its kind, and great care was bestowed upon the workmanship. It is unnecessary to say that the building is thoroughly fireproof.

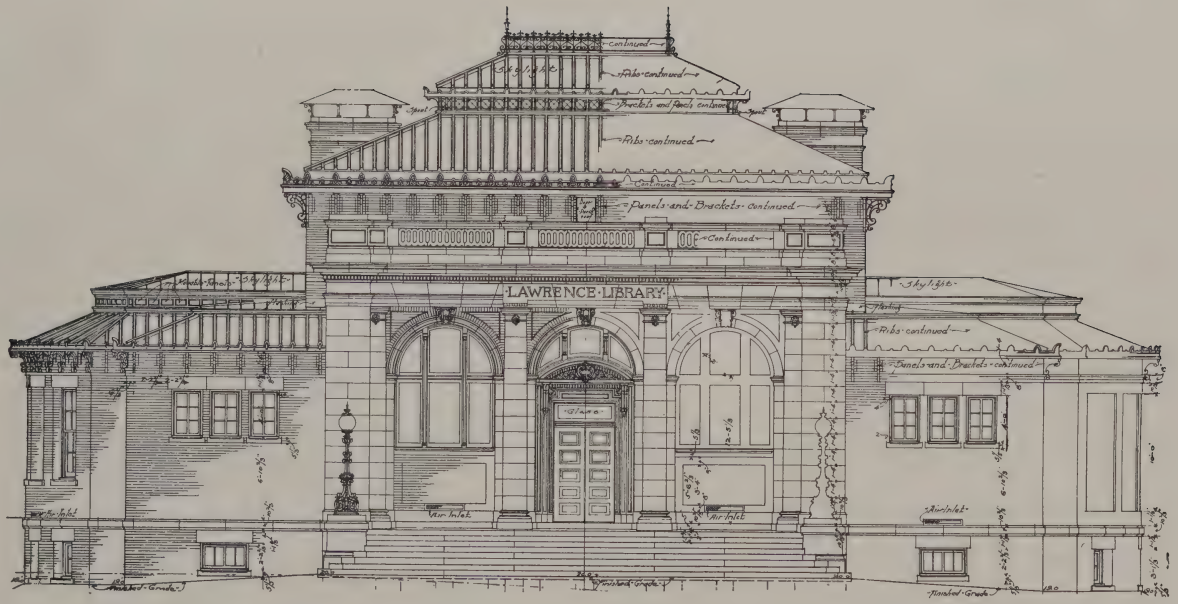


FIG. 25. MAIN ELEVATION OF THE LAWRENCE LIBRARY, PEPPERELL, MASS.
Ernest Flagg and W. B. Chambers, Architects.

The building is built of brick and limestone. The cornices and roofs are of copper, supported by wrought iron brackets. The cost of the building was fixed at $55,000, and it was built within that amount.

The total length is 92 feet and the width is 64 feet.



FIG. 26. GENERAL VIEW OF THE FARMINGTON AVENUE CHURCH, HARTFORD, CONN.

Mr. George M. Bartlett was associated with Mr. Flagg as architect of this building.

The church is built of a common grade of bricks of an agreeable shade of warm red. They are laid in a pattern with wide joints, which gives to the plain wall surface a very pleasant and interesting appearance. The cornices are of wood, painted white. The string courses are white marble, and the roofs are of red tile. There are colored glazed tile set in the walls below the cornice pediments. The tracery of the large windows is of copper.

The cost of the building, including the Sunday school building at the rear, was about $110,000.



FIG. 27. INTERIOR VIEW OF FARMINGTON AVENUE CHURCH, HARTFORD, CONN.

The general plan of the church is cruciform. There is a large central octagonal rotunda into which open the arms of the cross. As shown in the photograph, the choir arm is almost entirely occupied by the organ. The pulpit is so far advanced that the preacher can be seen from all parts of the interior. The rotunda is about fifty feet high, and the vault is richly ornamented with caissons and relief work. The transepts and nave are covered with barrel vaults with penetrations. The upper part of the organ case is of Keene's cement; the woodwork is white enamel, trimmed with mahogany.



FIG. 28. TOMB OF THE LATE SAMUEL J. TILDEN, NEW LEBANON, N. Y.

The monument stands on a knoll in a very beautiful cemetery, and can be seen from a great distance as one approaches the town. New Lebanon was the birthplace of Mr. Tilden, and the family has long been identified with its history.

The monument consists of an oblong base forming a platform about 24 feet long and 16 feet wide, the sarcophagus resting upon a truncated pyramid, on the steps of which lies a wreath and palm branch in bronze. The platform is reached by steps at one end, closed by a bronze gate. The material is Westerly granite. The carving is as sharp and fine as if executed in marble.

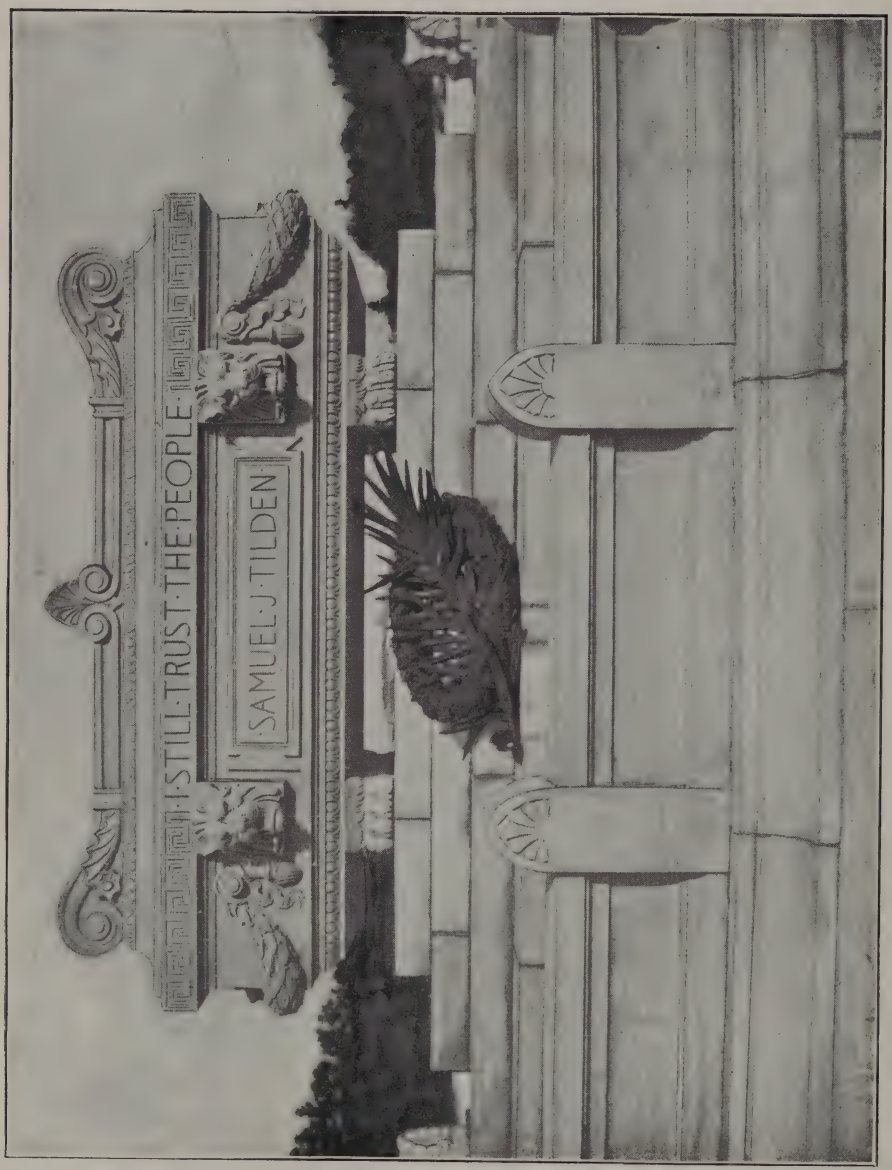


FIG. 29. TOMB OF THE LATE SAMUEL J. TILDEN, NEW LEBANON, N. Y.



FIG. 30. TOMB OF THE LATE SAMUEL J. TILDEN, NEW LEBANON, N. Y.
Detail Showing Bronze Gate.



FIG. 31. SINGER AND BOURNE BUILDINGS.
Liberty Street and Broadway, New York City.

Each of these building cost about $500,000. The materials used are red brick and Indiana limestone. The roof of the Singer Building is of slate and copper. It is proposed to add to this building on the Broadway side. When this is done, the principal entrance will be in the center of the Broadway front, and the small doorway in the base of the pier will be closed up.



FIG. 32. SINGER BUILDING, ST. PETERSBURG, RUSSIA.

This building, which is soon to be commenced, faces the principal square of the city. It is about 100 feet wide and 200 feet long. It is to be constructed of stone. The lower floor is to be occupied as a showroom by the Singer Sewing Machine Company. The upper floors will be used as offices.

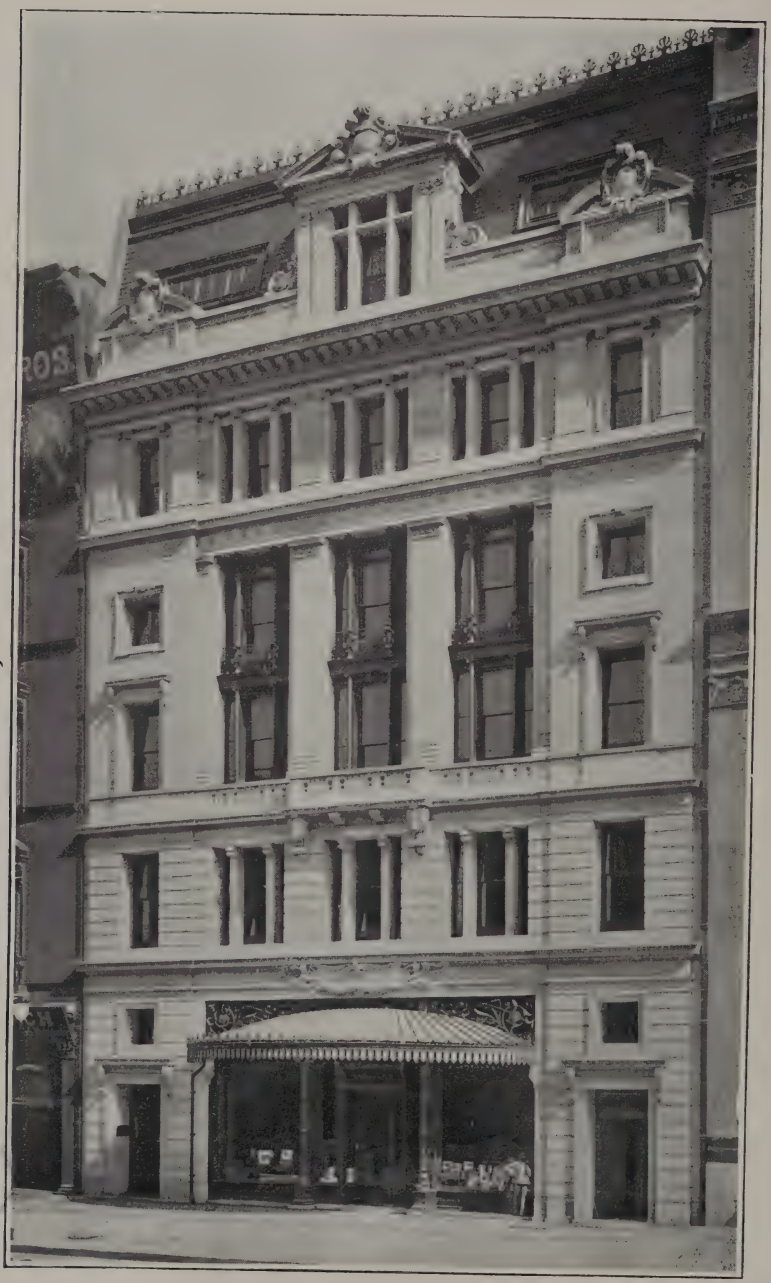


FIG. 33. THE SCRIBNER BUILDING, FIFTH AVENUE, NEW YORK CITY.

The building is about 64 feet wide. It is built of Indiana limestone. The marquise, which has been extensively copied, was the first of its kind in the city. The cost of the building was about $200,000.



FIG. 34. PERSPECTIVE VIEW OF THE CONNECTICUT MUTUAL LIFE INSURANCE CO.'S BUILDING, HARTFORD, CONN.

The company's old building at the corner of Main and Pearl streets is shown at the right of the picture. The two upper stories are now being added and extensive alterations being made to the interior. The old building is of granite. The new building is of brick and lime-stone. The facade of the latter measures about 150 feet in length. The new building will cost about $700,000, and the alterations and additions to the old building about $200,000. Although there are more stories to a given height in the new building than in the old, an attempt has been made to bring the two as much as possible into harmony. To accomplish this, the main cornice and certain other lines were kept at the same level, and the two stories added to the old building were designed neither to clash with the old work nor to be out of keeping with the new.

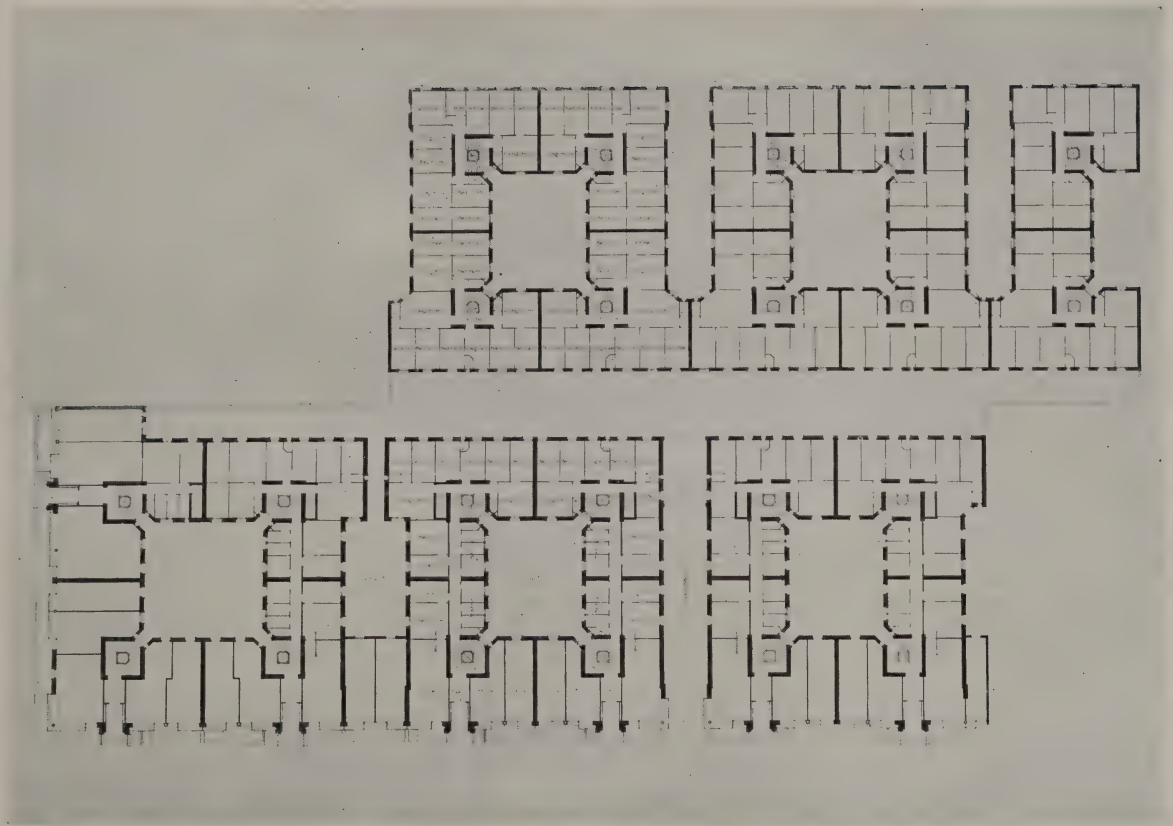


FIG. 35. PLAN OF THE N. Y. FIREPROOF TENEMENT ASSOCIATION'S MODEL TENEMENTS AT 41ST AND 42D STREETS AND 10TH AVENUE, NEW YORK CITY.

Some years ago Mr. Flagg published an article in Scribner's Magazine called "The New York Tenement House Evil and Its Cure," in which he contended that the whole difficulty with the New York tenement system lay in the plan. Up to that time these buildings were invariably built on the 25-foot lot, that is, each building was intended for a lot 25 feet wide and 100 feet long. Mr. Flagg recommended a larger unit, and published plans to show that if this were done, light, air and privacy could be obtained with no sacrifice of floor space. The article attracted a great deal of attention at the time, and many buildings have since been put up in accordance with the suggestions contained in the article. This group is the first group of fireproof tenements which have been built in New York. The economy of the plan is such that notwithstanding the fireproof character, the abundance of light, and the better arrangement of the rooms, they can be profitably rented at the same prices which prevail in the ordinary tenements, where most of the rooms have neither light nor air, and where there is neither safety from fire nor privacy for the family.



FIG. 36. FORTY-SECOND STREET ELEVATION OF BUILDINGS FOR THE NEW YORK FIREPROOF TENEMENT ASSOCIATION.

These buildings are built of light salmon-colored brick, with limestone dressings about the doorways. The window sills and lintels are of marble. There are 11 buildings in the group, containing 1,519 rooms, arranged in suites for 470 families. Each building has baths for the use of all the tenants, and 60 suites have private bathrooms.



FIG. 37. MODEL TENEMENTS FOR THE CITY & SUBURBAN HOMES CO., 68TH AND 69TH STREETS, NEW YORK CITY.

These buildings cover 19 lots. They are not fireproof. The material is light brick and Indiana limestone. The plan is similar to that in the buildings of the New York Fireproof Tenement Association at 41st and 42d streets and 10th avenue.



FIG. 38. ENTRANCE TO MILLS HOUSE NO. 1, BLEECKER STREET, NEW YORK CITY.

This entrance is in the center of the Bleecker street front. It gives access to a broad hall well lighted from above. A ticket office is on either side of the hall, just beyond the vestibule. It is here that guests of the house obtain their rooms, very much as state rooms are engaged on boats. The charge is 20 cents per night, and it is needless to say that no credit is given, though many of the inmates have kept their rooms almost ever since the house was opened.



FIG. 39. MILLS HOUSE NO. 1, BLEECKER STREET, NEW YORK CITY.

The building is on Bleecker street, between Thompson and Sullivan streets. It is built of light brick with trimmings of Indiana lime-stone. The cornice is of copper, with brackets of wrought iron. As there are 1,560 bedrooms in the building, to say nothing of the public rooms, and as it was desired that each bedroom should have an independent window, one of the problems was to supply the windows without giving the building a jail-like appearance. How this was accomplished can be seen by looking at this picture in connection with the plan. It will be seen that in certain places the windows for six rooms are grouped so as to count almost as a single opening. In its construction this building is one of the most fireproof structures in the city, as scarcely any wood is used. There is no wooden trim around either windows or doors, and the floors are of cement.

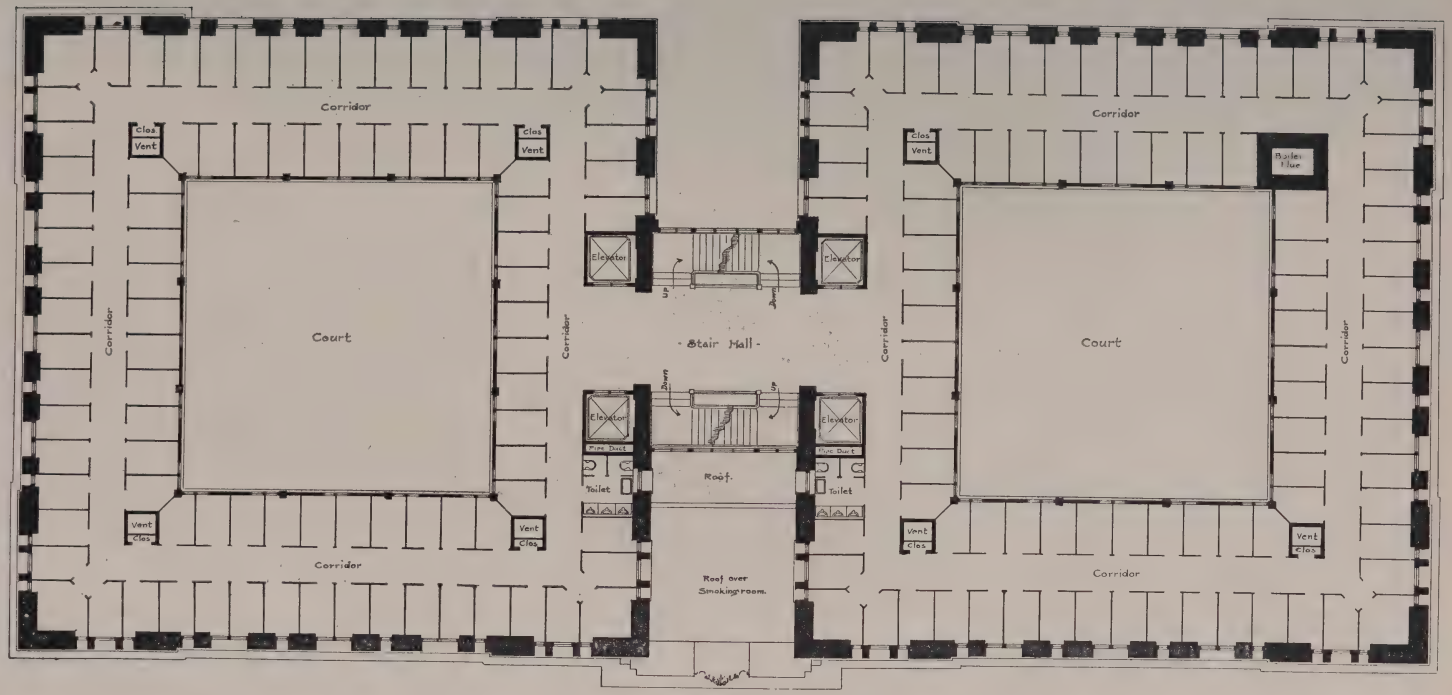


FIG. 40. TYPICAL FLOOR PLAN OF MILLS HOUSE NO. 1.

The building is 200 feet wide and 90 feet deep. It has streets on three sides and an open space 20 feet wide on the other. The two courts, which are each 50 feet wide, are covered with glass. The partitions between the rooms do not extend quite to the ceilings. Each room has a separate window either to the street or to the court. The ventilation is perfect. The fresh air is admitted through louvres under the skylight, and as it falls into the court it is drawn off through the windows on the court (which are provided with screens) and through the rooms to the corridors, from which it is discharged by the large vent flues, of which there are eight. The heat is supplied by steam pipes suspended from the ceilings of the corridors.



FIG. 41. VIEW OF ONE OF THE PARLORS OF MILLS HOUSE NO. 1.

This room is on the second story of the Bleecker street side. It connects with another room of the same size, and together they occupy the whole length of the Bleecker street front, a distance of two hundred feet. Few hotels in New York have a handsomer suite of parlors.



FIG. 42. DINING ROOM, MILLS HOUSE NO. 1.

The receipts from the restaurant amount to more than the receipts from the rooms. The average price of a meal is from ten to fifteen cents, so that one can obtain a room and board at about fifty cents a day. The dining room is over a hundred feet square, and has attached to it a very completely equipped culinary department.



FIG. 43. MILLS HOUSE NO. 2, RIVINGTON STREET, NEW YORK CITY.

Ernest Flagg and W. B. Chambers, Architects.

This building is situated at the corner of Rivington and Chrystie streets. It is built of the same kinds of materials as the Mills House No. 1, but is somewhat less than half its size. The internal arrangement is very much like that of the Bleecker street house. There are accommodations for 600 guests.



FIG. 44. CENTRAL COURT OF MILLS HOUSE NO. 2.
Ernest Flagg and W. B. Chambers, Architects.

This court, like the similar ones in the house No. 1, serves as a sitting room. The steps lead to the rooms, and the opening at the right of the picture gives access to the reading room. The floor is of glass set in iron frames, and gives light to the dining room, which is below.



FIG. 45. FIRE-ENGINE HOUSE IN GREAT JONES STREET, NEW YORK CITY.

The building occupies two lots. It is built of Indiana limestone and red brick. The cornice is of copper, supported by wrought-iron brackets. The brickwork is laid up with wide joints, and the face brick, as in all Mr. Flagg's later work, bonds with the rough brick backing. The brickwork of the coves at either side of the large window is an interesting and very fine specimen of bricklaying. The cost of the building was about $40,000.

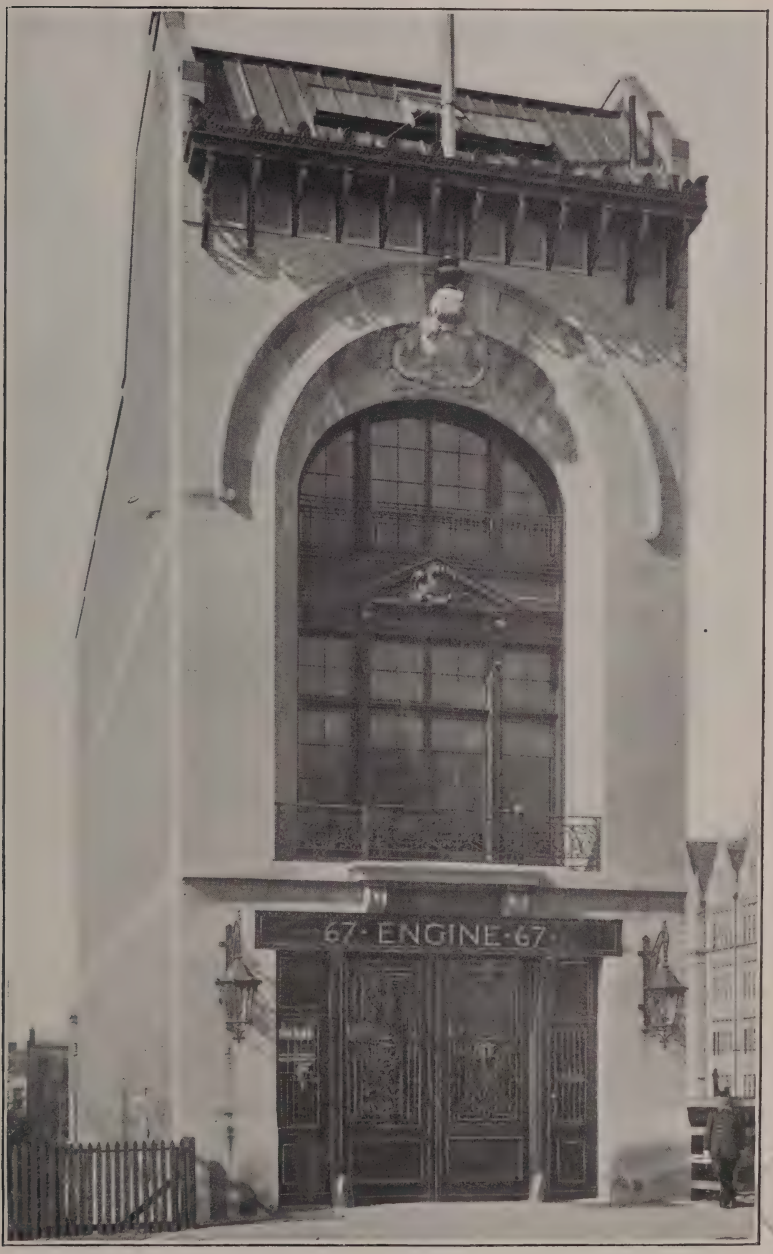


FIG. 46. FIRE-ENGINE HOUSE IN 170TH STREET.

Ernest Flagg and W. B. Chambers, Architects.

The building occupies a 25-foot lot. It resembles the Great Jones street house in design and construction, except that the brick is light yellow instead of red.



FIG. 47. RESIDENCE OF MRS. ALFRED CORNING CLARK, FROM THE SOUTH, RIVERSIDE DRIVE, NEW YORK CITY.

The materials used are white marble and red brick for the walls, and copper for the roofs. The house is finished front and back, inside and out, with equal care, and the workmanship and appointments are the best that money can buy. Probably no better built or ventilated house was ever put up. It was the desire of the owner that it should be plain, substantial and dignified.

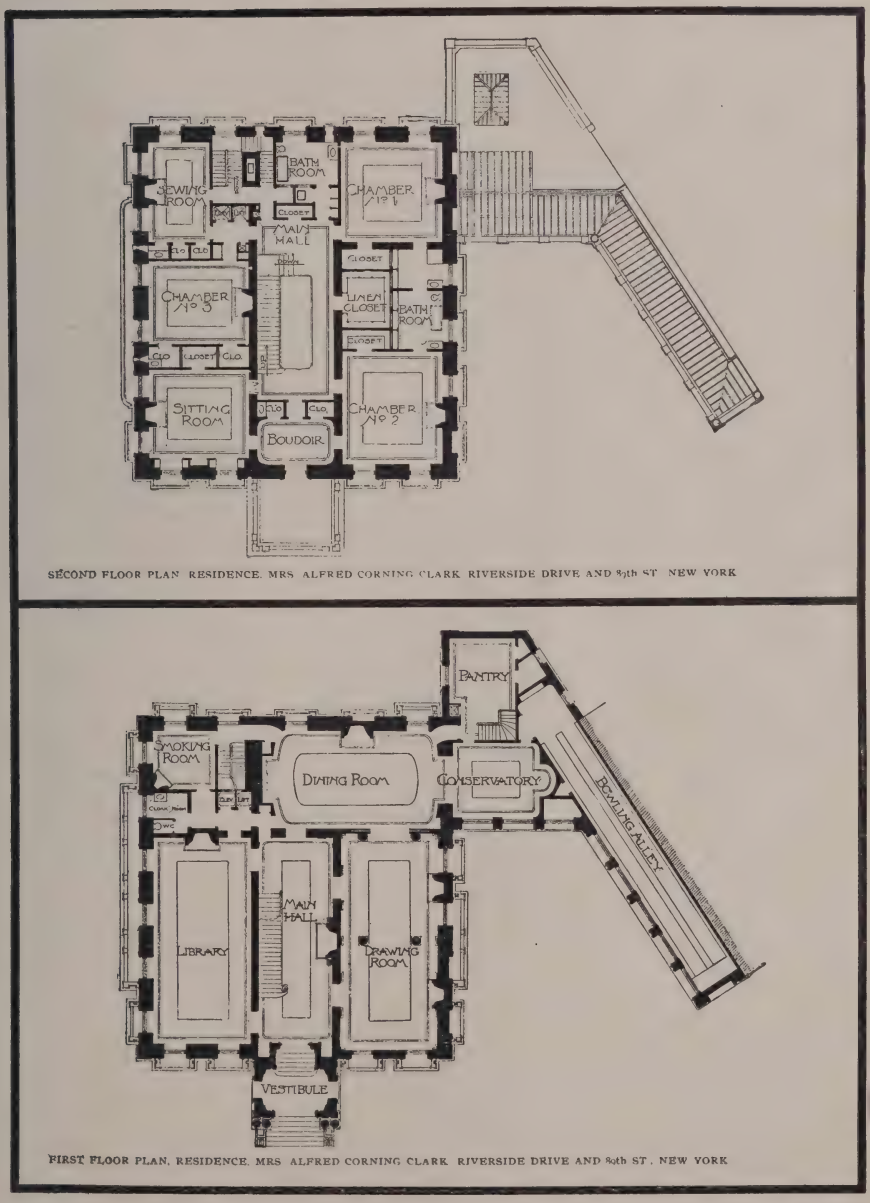


FIG. 48. PLANS OF A HOUSE FOR THE CLARK ESTATE, RIVERSIDE DRIVE AND 89TH STREET.

This house occupies a plot of ground of irregular shape, but whose principal dimensions are about 140 feet by 175 feet. The body of the building is about 70 feet wide and 80 feet long. The drawing room and library are each 22 feet wide and the hall is 18 feet wide.



FIG. 49. MAIN ENTRANCE, RESIDENCE OF MRS. ALFRED CORNING CLARK, 89TH STREET AND RIVERSIDE DRIVE, NEW YORK CITY.



FIG. 50. SOLDIERS' MONUMENT.

New Britain, Conn. Ernest Flagg, Architect.



FIG. 51. RESIDENCE OF O. G. JENNINGS, ESQ., NO. 7 EAST 72D STREET, NEW YORK CITY.
Ernest Flagg and W. B. Chambers, Architects.

The facade is 28 feet wide, built of Indiana limestone. The roof is of copper and slate. The alternate stone courses on the lower story are vermiculated. The entrance doors are a beautiful example of wood carving.



FIG. 68. DRAWING ROOM, RESIDENCE OF F. G. BOURNE, ESQ., OAKDALE, L. I.

The woodwork is of cherry, covered with white enamel; the floor is of oak, and the panels are covered with a rich brocade.

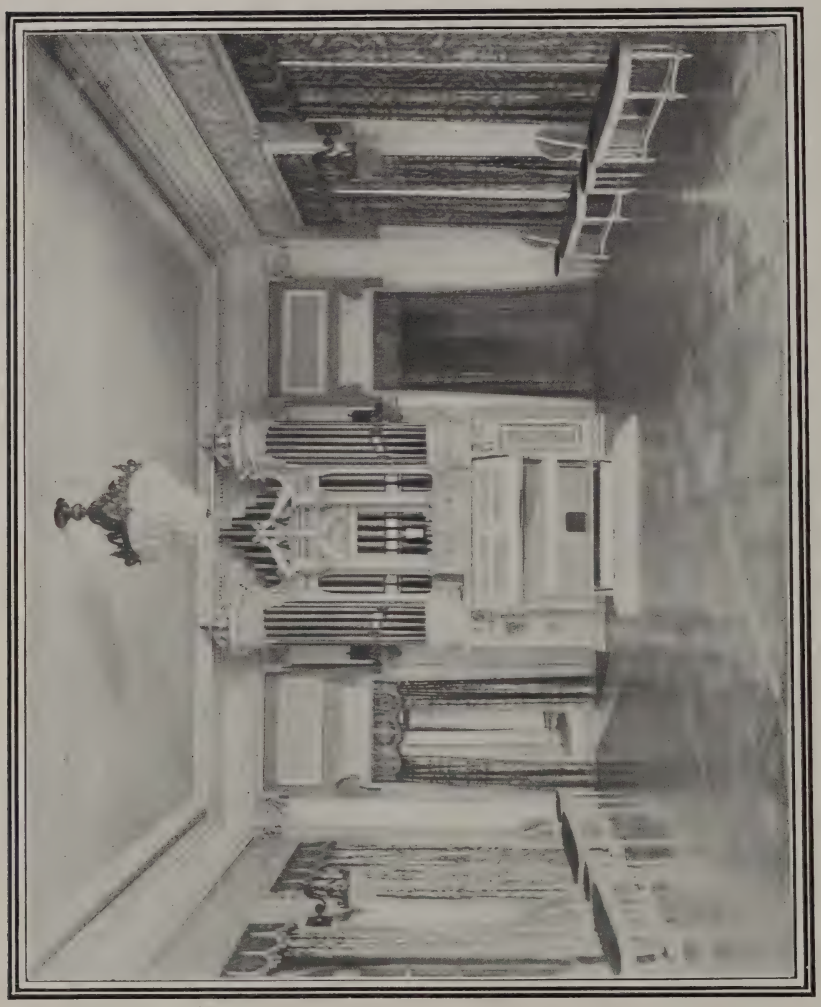


FIG. 69. MUSIC ROOM IN RESIDENCE OF F. G. BOURNE, ESQ., OAKDALE, L. I.
The organ in this apartment is a very fine instrument, extending through two stories.



FIG. 70. MUSIC ROOM IN RESIDENCE OF F. G. BOURNE, ESQ., OAKDALE, L. I.

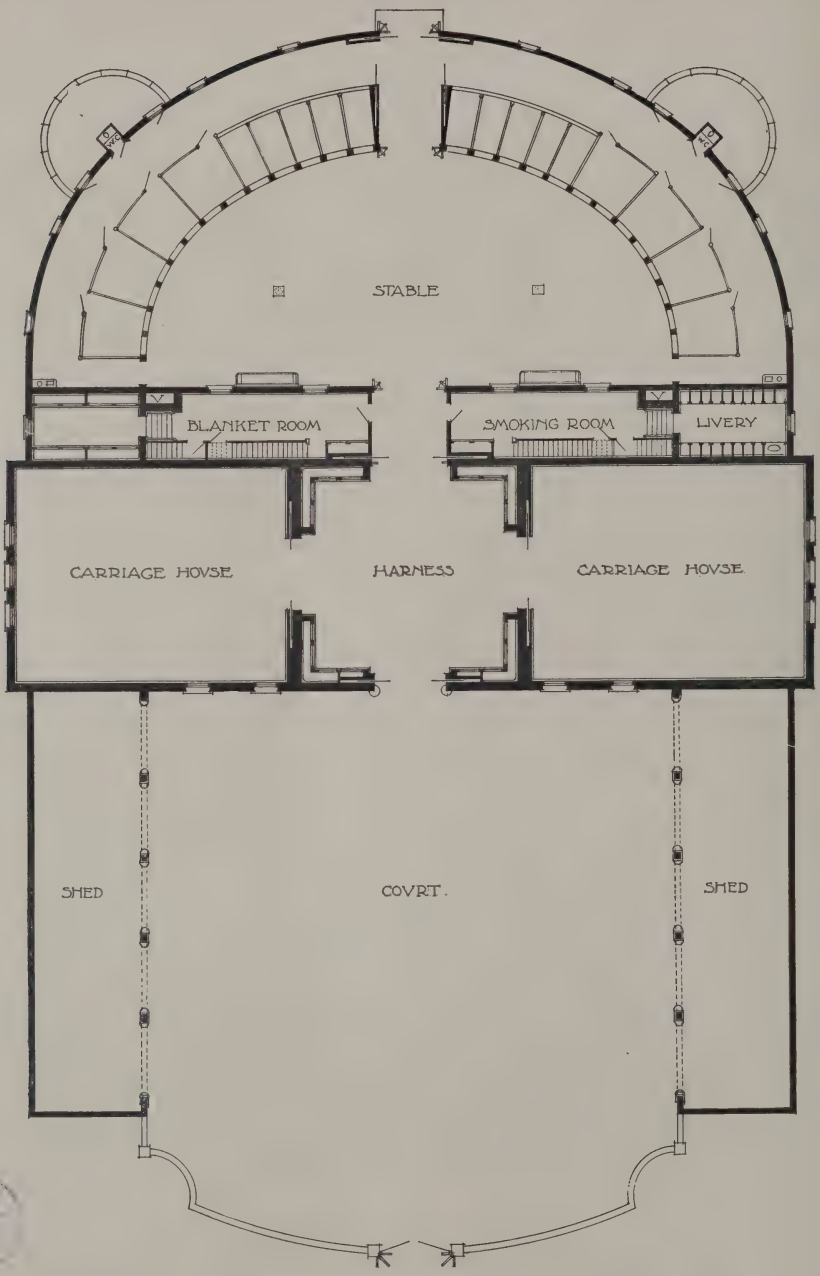


FIG. 71. STABLE OF F. G. BOURNE, ESQ., OAKDALE, L. I.

The building is about 165 feet wide and 200 feet long. The plan is unique. The harness room is of the whole height of the central tower. The upper harness cases are reached by a balcony. Each carriage house is 40 feet wide and 60 feet long. Beyond the harness room the great semi-circular room has an oak ceiling with a large skylight. The horses in the stalls face this room, and can be seen through openings in the arcade which separates it from the stables, so that each horse's head appears to be framed, so to speak, in a brick and marble opening. The effect is fine and unusual; indeed, the whole arrangement of the plan is novel and interesting.



FIG. 72. EXTERIOR OF STABLE OF F. G. BOURNE, ESQ.

The materials are red brick and white marble, to correspond with the house. The central tower contains the harness room.

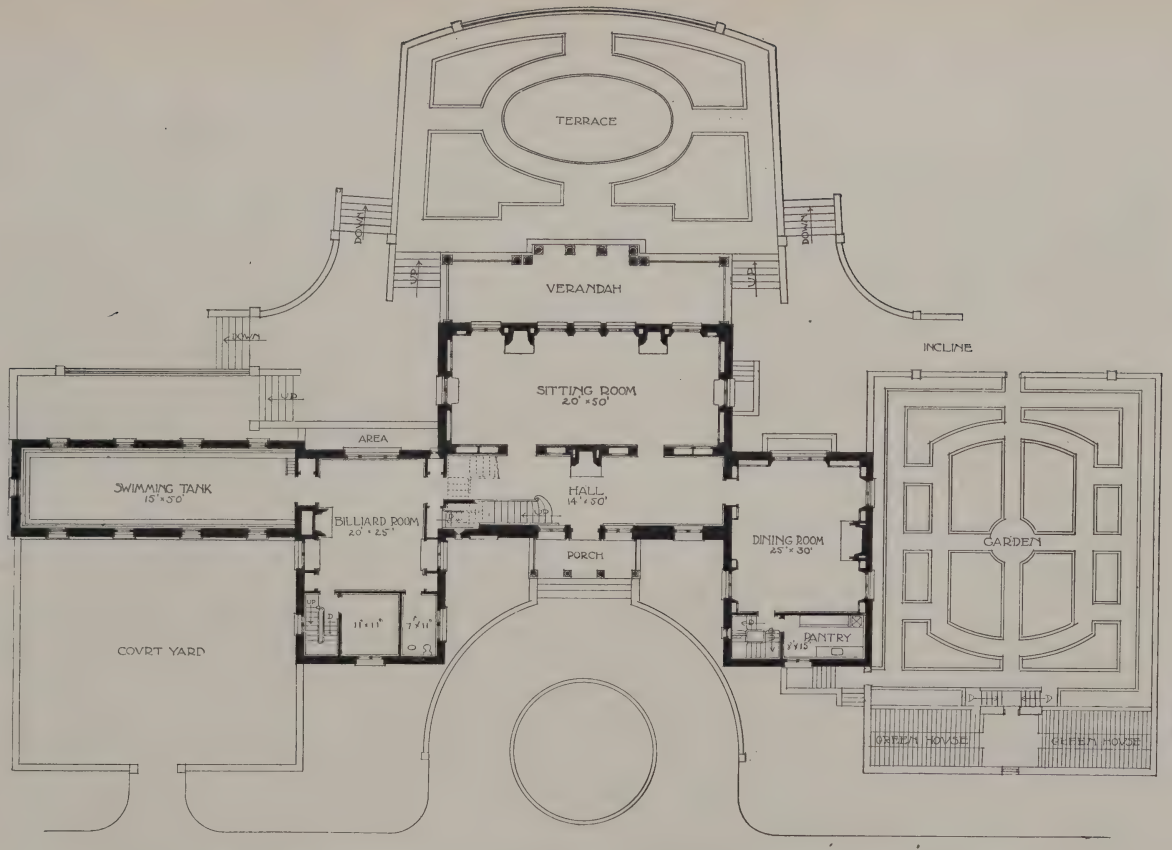


FIG. 73. FIRST FLOOR PLAN OF ERNEST FLAGG'S RESIDENCE, DONGAN HILLS, S. I.

The building stands on a ridge on the southeast side of Staten Island, overlooking the ocean at an elevation of about 200 feet above the sea. A lawn of several acres on the water side slopes gently from the house to the edge of the bluff. On the other side the crest of the ridge is covered by an oak grove, forming a fine background for the building. From the grove the ground inclines gently to the foot of a valley, where there is a brook and artificial pond. On this slope is the orchard, the stable with its enclosures, and an extensive garden laid out with geometrical walks and borders.

The kitchen is under the dining room and the laundry under the billiard room, but the floors of both these rooms are above the level of the ground, the courtyard and garden being sunken. On the second floor there are two bedrooms 20 x 22 feet, one 17 x 20 feet, and two 17 x 12 feet. Each of these has its own bath room. The servants' quarters are over the wings. On the third floor there are six bachelor bedrooms.



FIG. 74. VIEW OF THE RESIDENCE OF ERNEST FLAGG, ESQ., FROM THE LAWN ON THE WATER SIDE, DONGAN, S. I.

There are still on Staten Island quite a number of old stone houses which were built by the early settlers; most of them are considerably more than 200 years old. They are generally small. Several have gambrel roofs, and all are whitewashed. The design for the house was suggested by these old buildings. It has very thick stone walls, which are whitewashed. The upper part of the central portion is covered with long hand-made shingles. The wing at the right of the picture contains a swimming bath 25 feet wide and 50 feet long, lined with white tiles, and roofed with glass. An interesting feature is the large chimneys. These are really combination chimneys and vent flues, and by means of them the house is perfectly ventilated, the system being operated by the waste heat, which in other houses usually escapes up the chimney without doing any work. The terraces are laid out with walks and borders. On the other side of the house there is a "basse-cour," inclosed with a stone wall, at the northeast of the entrance driveway, and a rose garden in a similar enclosure to the southwest of it.



FIG. 75. HALL, RESIDENCE OF ERNEST FLAGG, ESQ., DONGAN, S. I.

The hall is 15 feet wide and 50 feet long. The main entrance is directly opposite the fireplace. The chimney breast and mantel are of white marble. The walls are wainscoted with wood covered with white enamel. In the chimney breast there is a chamber in which there are 16 iron tubes, through which the smoke passes; air is admitted to this chamber through two registers near the floor (one of which shows in the picture); as it becomes heated it rises and passes out through two similar registers near the ceiling. There is a similar contrivance in the same chimney on the floor above, which helps heat two bedrooms. By this contrivance a great deal of heat is saved, but there is still enough heat left in the smoke to operate the ventilating system. All the other chimneys are arranged in the same way. The doors in the distance lead to the swimming tank.



FIG. 76. LIVING ROOM, RESIDENCE OF ERNEST FLAGG, ESQ., DONGAN, S. I.

The length of this room is exaggerated in the photograph. It is 50 feet long and 20 feet wide. There are five windows on one of the long sides opening upon the piazza and terrace. From these windows there is a superb view of the ocean. One of the end windows overlooks the rose garden, and the other a terrace.

At either end of the room, bookcases, with glass doors, are set into the wall. The woodwork, except the doors, is painted with white enamel. The doors are of mahogany. The wall surface above the wainscoting, the hangings and furniture covering are green. There are two fireplaces and two doors to the hall. The height of the story is about 11 feet.



FIG. 77. CORNER IN HALL, RESIDENCE OF ERNEST FLAGG, ESQ.



FIG. 78. WATER TOWER AND STABLES, RESIDENCE OF ERNEST FLAGG, DONGAN, S. I.



FIG. 79. WATER TOWER, RESIDENCE ERNEST FLAGG, ESQ.

THE NAVAL ACADEMY DESIGNS.

Regarding the drawings of the Naval Academy herewith given, it is proper to say that some of them represent modifications in the original plan which have come about through further study and changes necessitated by the increase in size required for the marine engineering course. Originally the marine engineering course was followed only by cadet engineers; now it is taken by all the cadets, and this change involved a much larger building. The building is located directly back of the Academic Building on the original plan. The Library and offices for the administration were to have been in the Academic Building. As the new Marine Engineering Building would shut in the Library, it was thought better to make a separate building for it, and place it near the basin on the north-east side of the campus directly opposite the chapel.

The Officers' Mess, which was to have been at the right of the chapel as one faces the campus, has been placed at the end of the main row of officers' houses.

The Administration Building was to have been at the left of the Chapel as one faces it from the campus. This has now been placed to the right of the Chapel. The building to the left is the residence of the superintendent. The superintendent was to have occupied an old Colonial building which was formerly the residence of the governors of Maryland, and which it was proposed to restore to its original condition, but when the work was commenced it was found that the walls were so poorly built that it was impracticable to do anything with it.

The main entrance to the superintendent's residence is from a courtyard on the southeast, arranged very much like the Petit Trianon at Versailles. On the ground floor is the main vestibule, staircase hall, office for the superintendent, the kitchen and laundry with their dependencies. On the first floor, which can be entered from the terrace in front of the house, are the principal rooms of entertainment. The dining-room is at the southwest side and is circular. The second and third floors contain the bedrooms.

The Administration Building at the other side of the chapel resembles the superintendent's residence in appearance, and the size is identical, but it has no courtyard, and the architect has given it more the appearance of a public building, while preserving the same bulk and general outline. The circular room on the first floor, which corresponds to the dining-room in the superintendent's residence, is the meeting room for the Academic board.

In re-arranging the group of buildings which occupy the former site of the Academic Building, the architect has made the most of the new Marine Engineering Building. In order that this may be seen from the campus he placed the Academic Building (now greatly reduced in size) on one side of the court, and the Physics and Chemistry Building on the other, retaining the Observatory Tower in its original place, but detaching it from all the other buildings. We show a plan of this group, and an elevation showing the ends of the Physics and Chemistry Building, the Academic Building, the Observatory Tower, and the Marine Engineering Building in the background. This latter building is at a lower level, there being a road between it and the group just mentioned. As this Marine Engineering Building contains shops, storage rooms, etc., it is somewhat subordinated to the two buildings which stand at either side of the courtyard, and which are used strictly for academic purposes. This subordination is effected by placing it at a lower level than that of the main courtyard, from which it is separated by a sunken road.

The Library, of which plans and elevations are given, is to stand in the center of the river side of the campus. On the side towards the campus, the building is preceded by a terrace from which the main portico is reached. This opens upon a lobby, which contains a staircase at either end. Beyond the lobby is the main reading-room which overlooks the river. The stack rooms project from the main body of the building on either side. On the second floor is to be the rooms of the Naval Institute.

It only remains to speak of the Officers' Mess. This is a long narrow building at the end of the main row of officers' houses and opposite the gymnasium. It has been moved from the place originally assigned for it near the Physics and Chemistry Building, to the water side of the southeast end of the grounds, at the southwest of the parade ground. The football field will be between the gymnasium and the officers' mess. The Officers' Mess is used somewhat as a club house, and contains a billiard room, reading room, card room and various dependencies on the ground floor, while on the two floors above are suites for bachelor officers and for guests.

The gymnasium plan is not yet sufficiently worked out for illustration. These notes with others accompanying the illustrations will make clear the purpose and general scheme of the extensive and noble group of buildings.

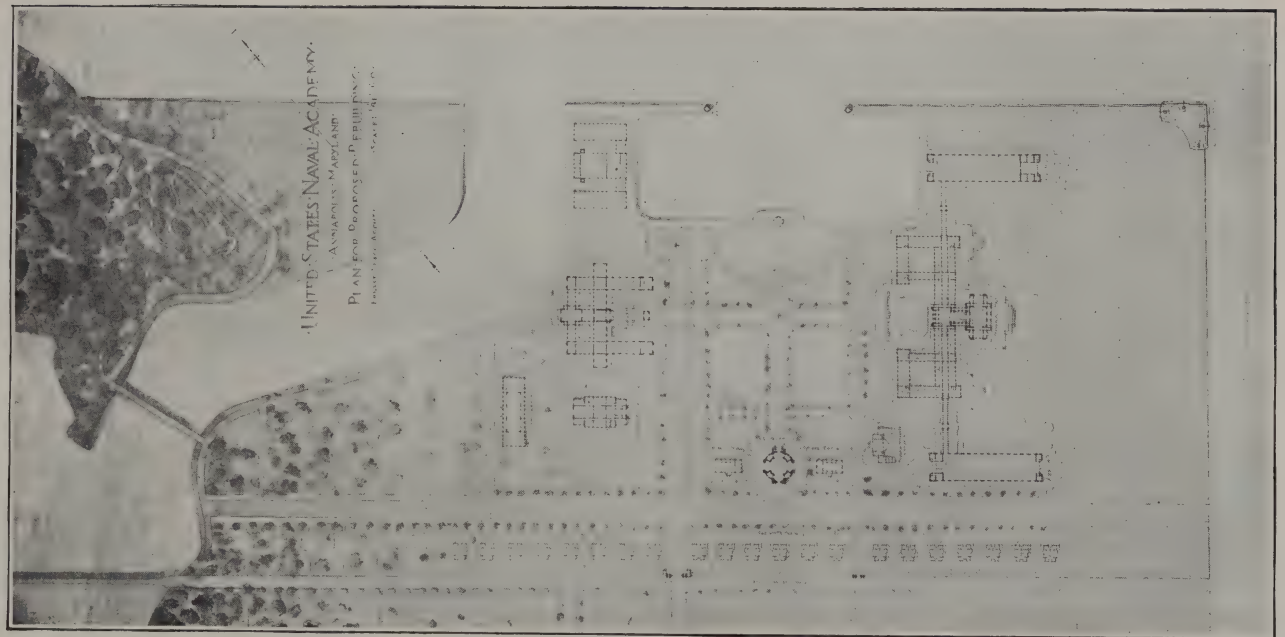


FIG. 80. GENERAL PLAN, NAVAL ACADEMY, ANNAPOLIS, MD.

The plan of improvements contemplates the building of extensive sea walls, the reclaiming of several acres of land now under water, and the almost complete rebuilding. The town of Annapolis lies to the southwest of that part of the ground shown on the plan, Chesapeake Bay to the southeast, the Severn River on the northeast, and other property of the Government on the northwest. The campus occupies the central part of the plan. Upon it face the Academic building, the Physics and Chemistry building, the Administration building, the Chapel, the Officers' Mess, the Cadet Quarters building, and the superintendent's or commanding officer's quarters. The latter, a Colonial building, was formerly the official residence of the Governors of Maryland.; it is to be restored as far as possible to its original condition. This, and old Fort Severn—shown on the plan by a circle on the parade ground—are the only relics of the old academy which are to remain.

The power-house group and the boat house face the basin, which opens upon the Severn River. The officers' quarters are in a row just within the wall which separates the academy from the town. The armory lies to the southwest of the cadet quarters, and faces upon the parade ground.

Congress has authorized contracts for more than $8,000,000 for this work.



FIG. 81. GENERAL VIEW OF THE BUILDINGS FROM THE SOUTHEAST, ANNAPOLIS, MD.

In this picture the observer is supposed to be stationed some distance out on and above the bay. In the foreground is the parade ground, with the new practice battery on the point. Old Fort Severn, which used to be on the point before the flats were reclaimed, is shown on the parade ground just to the right of the center. It is a curious little circular fort, with immensely thick walls. The large central building facing the parade ground is the cadet quarters. It is connected on the right by a colonnade with the boat house, and a similar colonnade on the left connects it with the armory. The central projecting mass contains the mess hall below and the memorial hall above. The quarters stand on a terrace, which overcomes the difference in level between the made ground of the parade ground and the natural soil of the campus. The building with a tower, beyond the cadets quarters, is the Academic building; to the left of it is the Physics and Chemistry building, and to the right of it on a pier is the power-house group.



FIG. 82. GENERAL VIEW OF THE CADET QUARTERS, BOAT HOUSE AND ARMORY FROM THE DOME OF THE CHAPEL, ANNAPOLIS, MD.

The building at the extreme right is the armory. It is 100 feet wide and 500 feet long. This was the first of the new buildings to be started, and it is now nearing completion.

The boat house, on the other side of the cadet quarters, is of precisely the same dimensions, and is at present well under way. The boat house and armory each cost about $400,000. The construction of the cadet quarters is just about to begin.

This bird's-eye view gives a good idea of the general arrangement of the building, as it shows the two enclosed courts, each 100 feet square, and the main Cour d'Honneur, which precedes the principal entrance.

At the extreme left of the picture is the basin, partly cut off from the Severn River by piers, which are terminated by stone beacons, one of which appears in the picture.



FIG. 83. THE MAIN ENTRANCE TO THE CADET QUARTERS, ANNAPOLIS, MD.

This design as here illustrated is in the nature of a preliminary study, and it has been very much modified and improved in the working drawings. The three arched openings have given place to square-headed doorways, a great horseshoe-like ramp has taken the place of many of the steps, and the general unstudied appearance of the sketch has disappeared.

This entrance gives access to the great entrance hall or vestibule and the monumental stairway. Both these apartments, like the memorial hall and the mess hall, are to be lined with Indiana limestone. From the vestibule a broad flight of marble steps leads to the memorial hall. Here are to be placed a fine pair of bronze doors by the Sculptor Bartlett, a gift to the academy by Robert M. Thompson, a former graduate.



FIG. 84. ELEVATION OF CADET QUARTERS ON THE SIDE TOWARD THE CAMPUS, ANNAPOLIS.

This is the largest of the contemplated buildings. Its extreme length is about six hundred feet, and its extreme breadth is about four hundred feet. It contains accommodations for five hundred cadets. The suites are each for two men, and consist of two bedrooms of about 8 feet by 16 feet, a study about 16 feet by 16 feet, an entry closet and shower bath. The central part contains a grand vestibule and stair hall.

The building, like all the others, is fireproof, and is to be built of brick with granite trimmings. The roofs are of copper and slate. A monumental grille will separate the recessed court from the campus.

The estimated cost of the building, with the terraces and colonnades which connect it with the boat house and armory, is about $3,000,000.



FIG. 85. INTERIOR VIEW OF THE MEMORIAL HALL, ANNAPOLIS, MD.

This is the chief room of the cadet quarters. It is about 150 feet long and 60 feet wide. The walls up to the top of the main cornice are to be of Indiana limestone. The vault is of concrete, ornamented with relief work in stucco. This will be in a certain sense the show-room of the institution, for here are to be housed that splendid collection of relics which has been accumulating for years at the academy. Its walls will be decorated with flags, trophies and pictures, while numerous cases will contain arms, historic documents and other mementoes connected with the navy from its foundation. Incidentally, the hall is to be used as the ball room, and as it opens upon the grand staircase hall and vestibule, which are of almost equal area, it will serve admirably for the purpose. The dining or mess hall below it is of the same size and shape.



FIG. 86. THE CHAPEL.

The general plan of the building is a Greek Cross, intersected by two circles. The inner one forms the rotunda, which is about 60 feet in diameter. This sketch was a preliminary study, and the design as it is being carried out has been greatly improved and modified, though the dimensions and general form are the same.

The chapel has a seating capacity of about one thousand. Below the main floor is a crypt, which it is proposed shall contain catacombs and be used as the last resting place of naval heroes. Thus the building will become the Pantheon of the Navy.

This building has been given a place of honor in the general plan, being placed at the center of one side of the campus, on the main transverse axis of the plan, and on the highest land within the enclosure. By its height and form it will, to a certain extent, be the dominating feature of the design. It will be constructed almost entirely of granite. The estimated cost is $400,000.

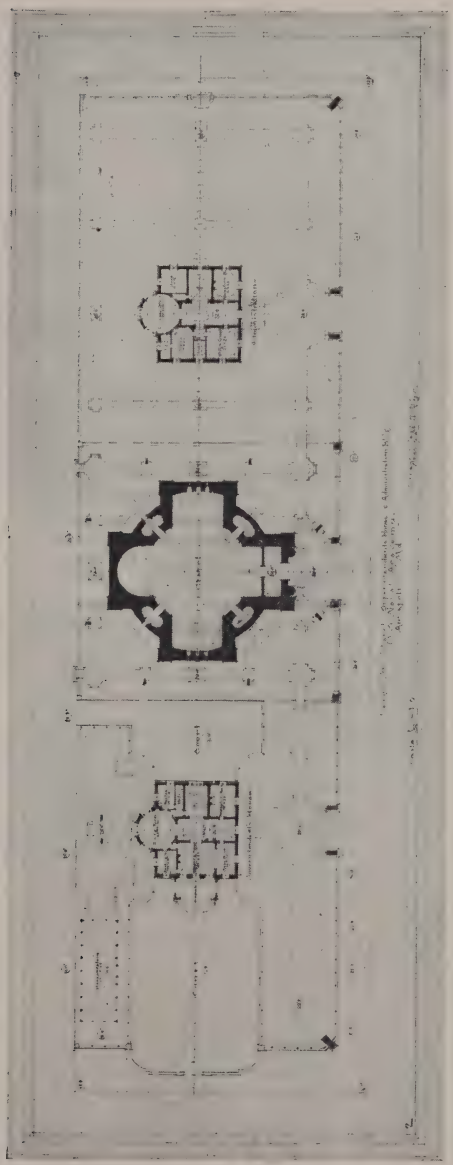


FIG. 87. PLAN OF CHAPEL, SUPERINTENDENT'S HOUSE AND ADMINISTRATION BUILDING, ANNAPOLIS, MD.



FIG. 88. ELEVATION SHOWING CHAPEL, SUPERINTENDENT'S HOUSE AND ADMINISTRATION BUILDING, ANNAPOLIS, MD.

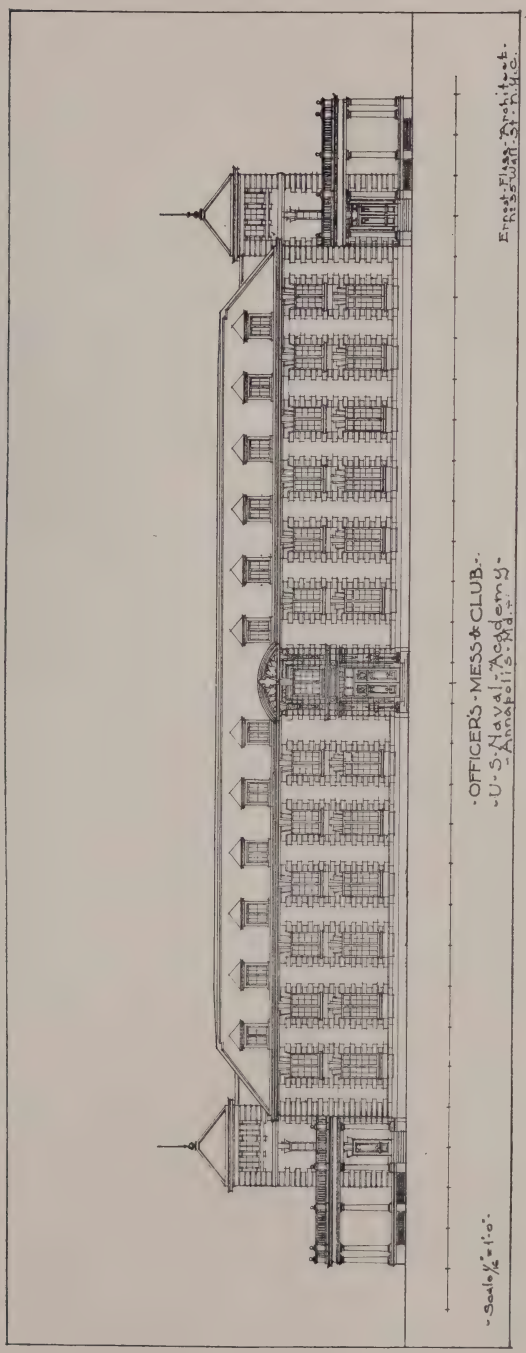


FIG. 89. OFFICERS' MESS AND CLUB, ANNAPOLIS, MD.

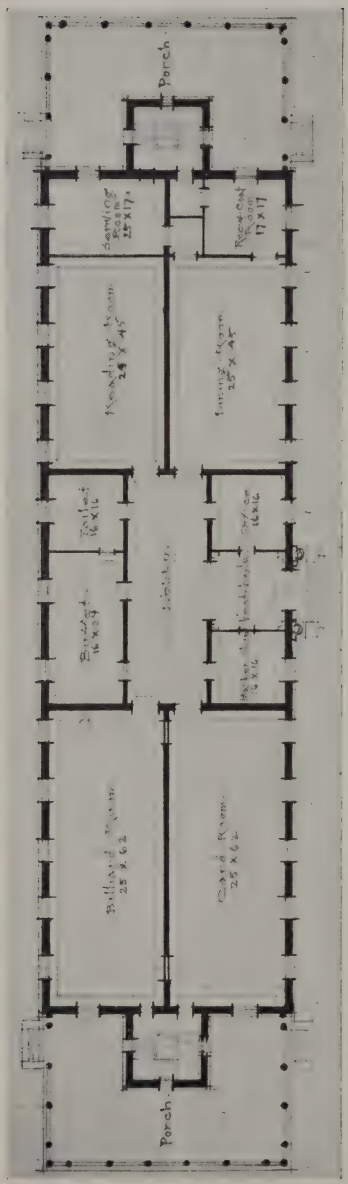


FIG. 90. PLAN OF FIRST FLOOR, OFFICERS' MESS AND CLUB, U. S. NAVAL ACADEMY, ANNAPOLIS, MD.

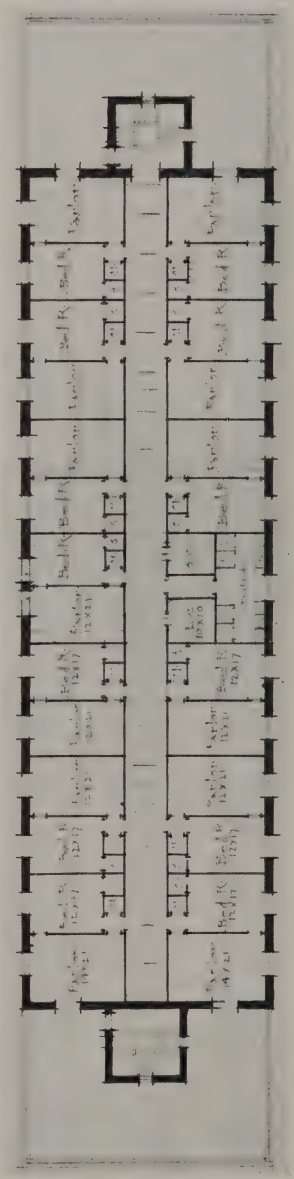


FIG. 91. PLAN OF SECOND FLOOR.

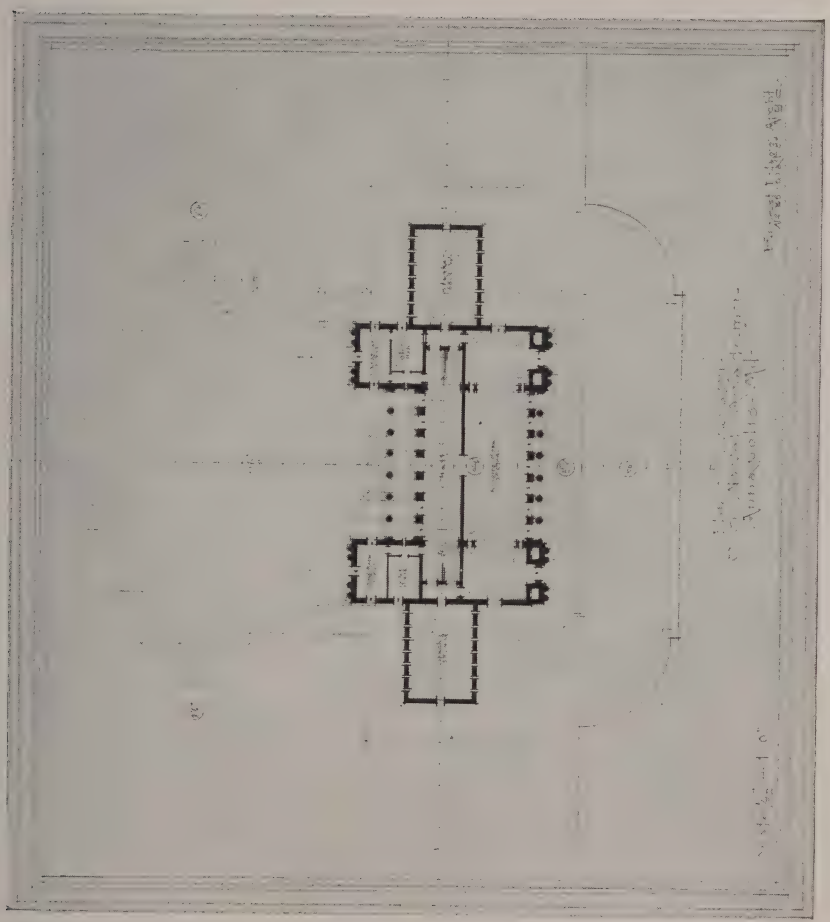


FIG. 92. PLAN OF LIBRARY, ANNAPOLIS.

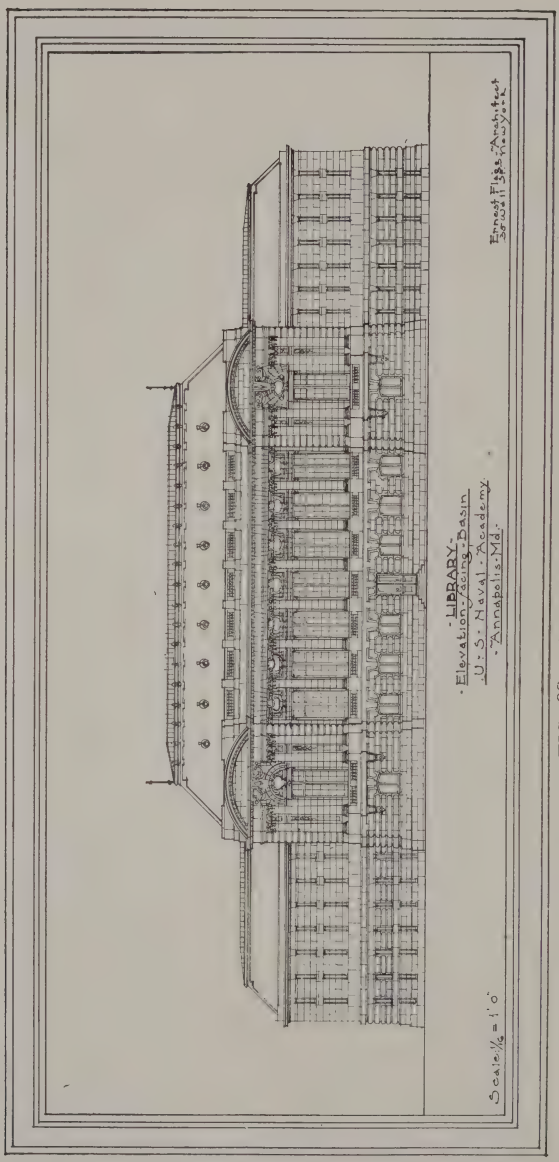


FIG. 93. LIBRARY, ANNAPOLIS.

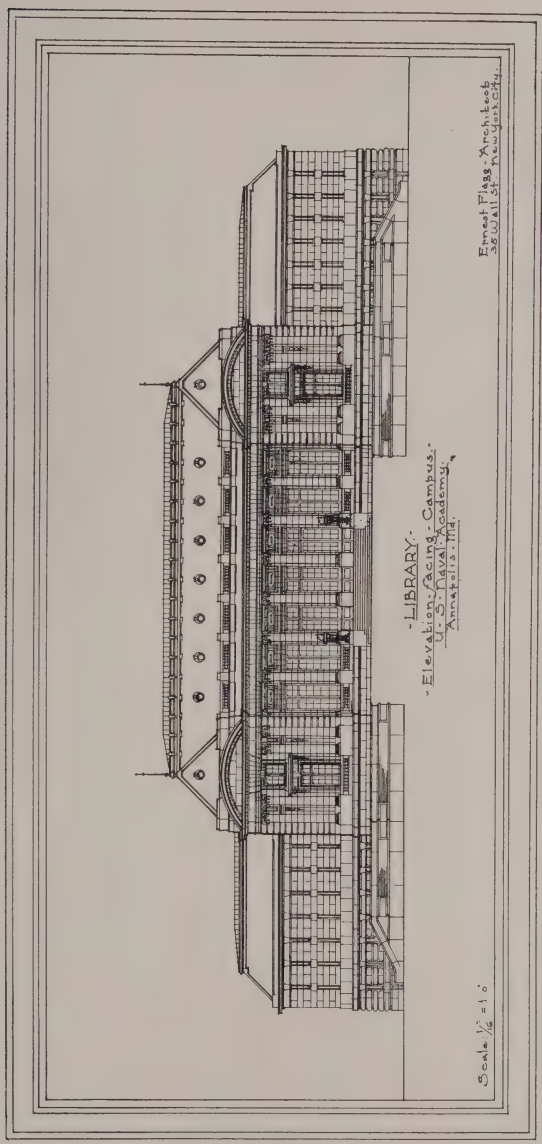


FIG. 94. LIBRARY, ANNAPOLIS.

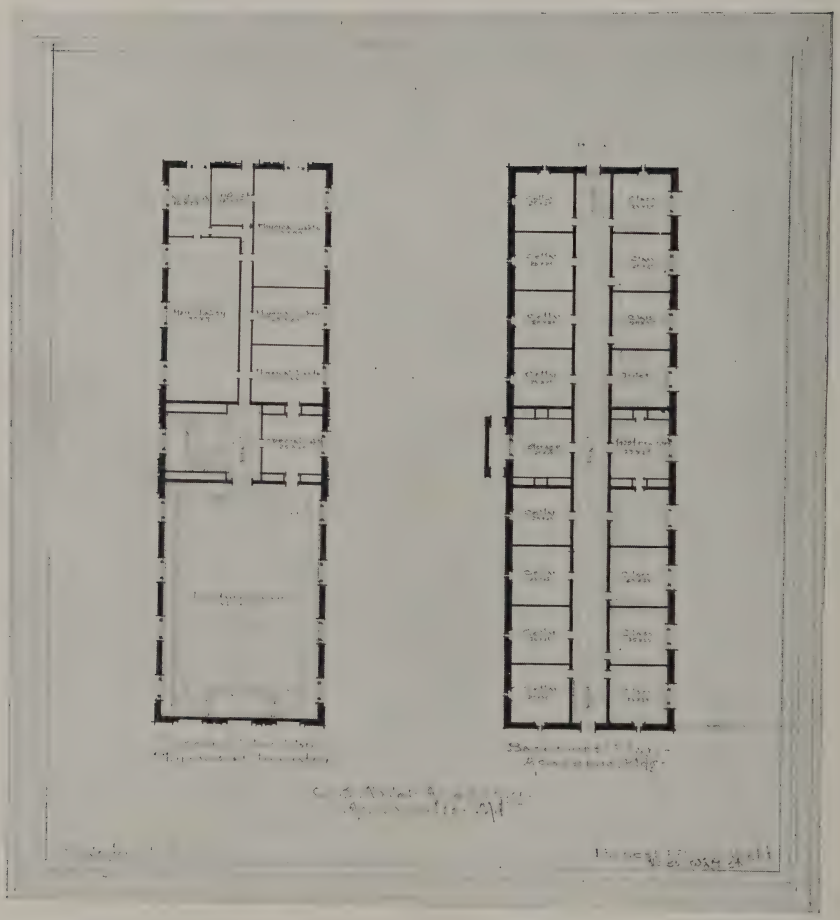


FIG. 95. PLAN OF PHYSICS AND CHEMISTRY AND ACADEMIC BUILDINGS, ANNAPOLIS.

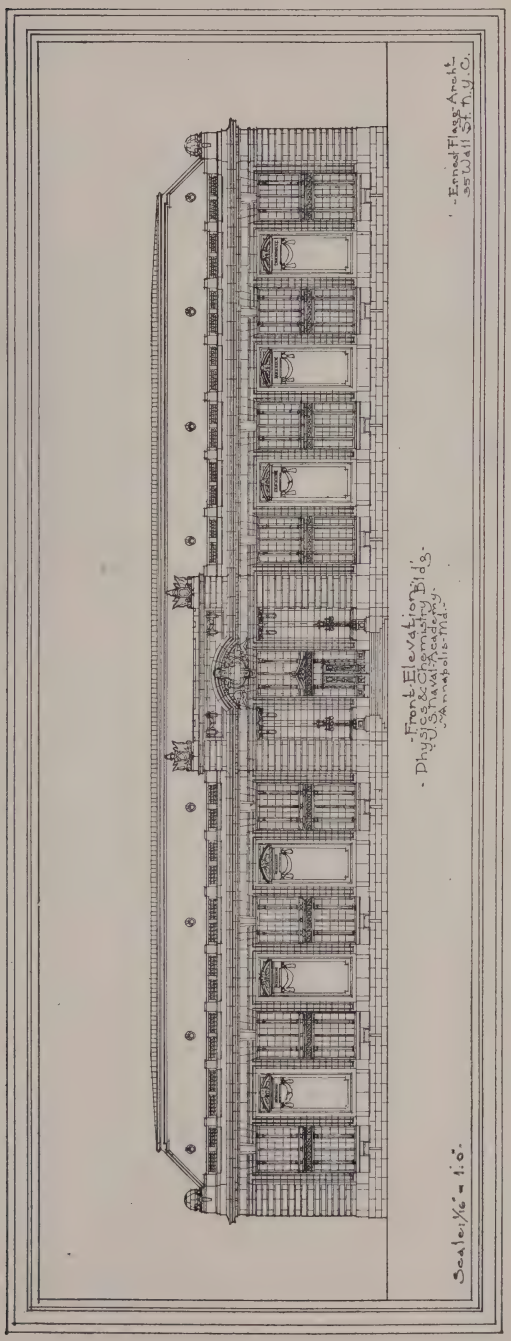


FIG. 96. PHYSICS AND CHEMISTRY BUILDINGS, ANNAPOLIS, MD.

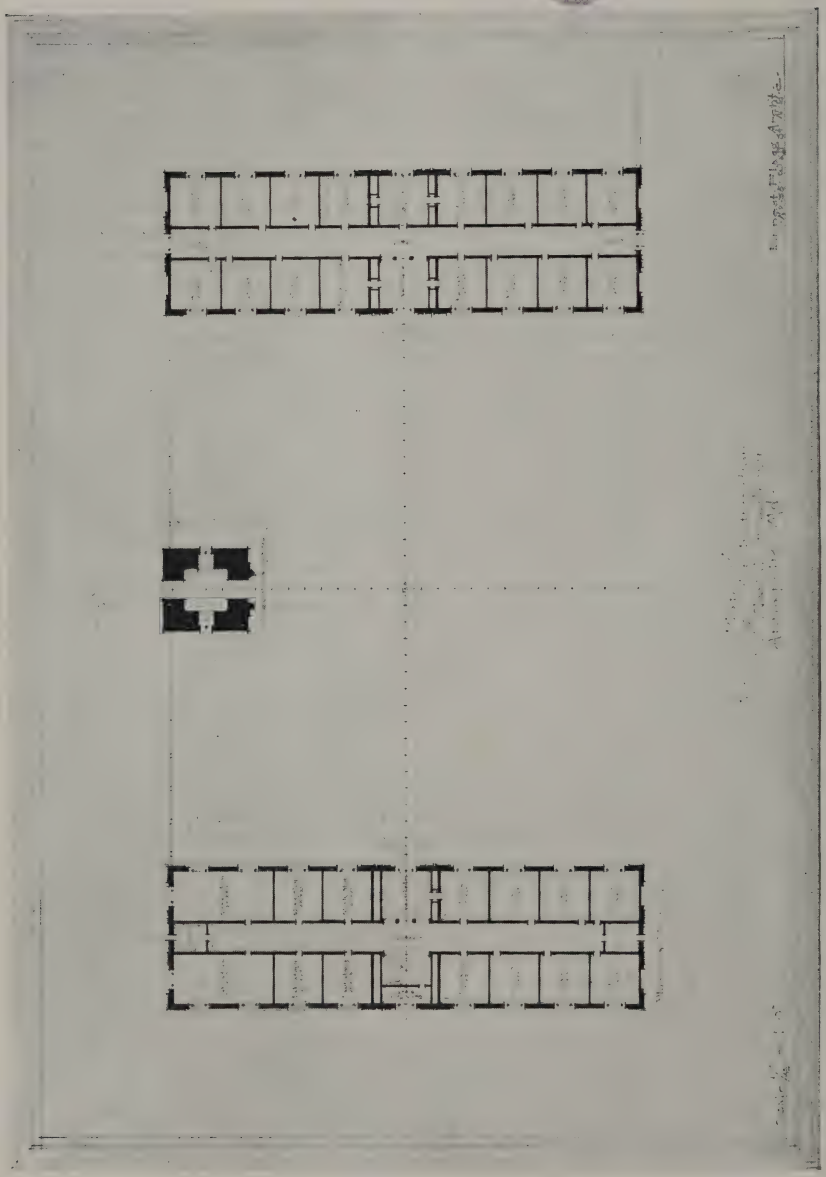


FIG. 97. PLAN OF BUILDING FOR INSTRUCTION, ANNAPOLIS, MD.

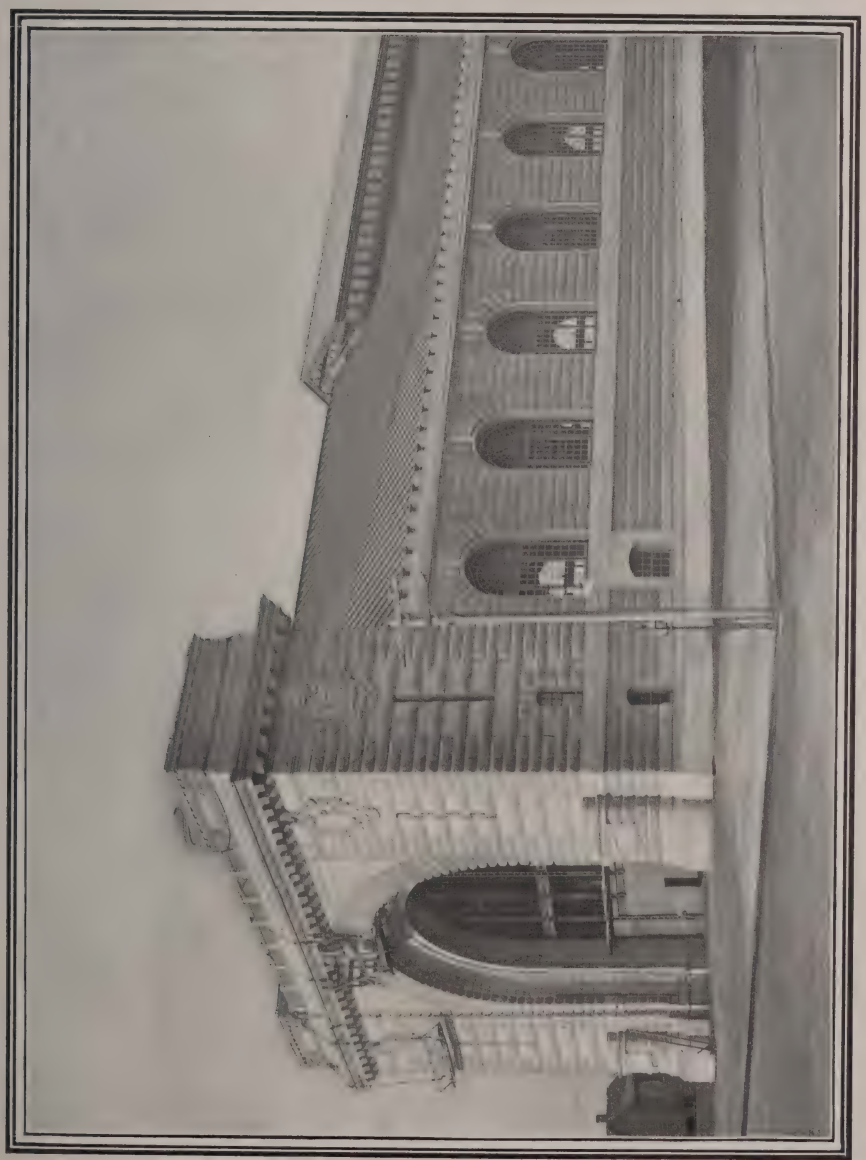


FIG. 98. FROM PHOTOGRAPH OF ARMORY BUILDING, ANNAPOLIS, MD., SHOWING THE BUILDING, RECENTLY COMPLETED.

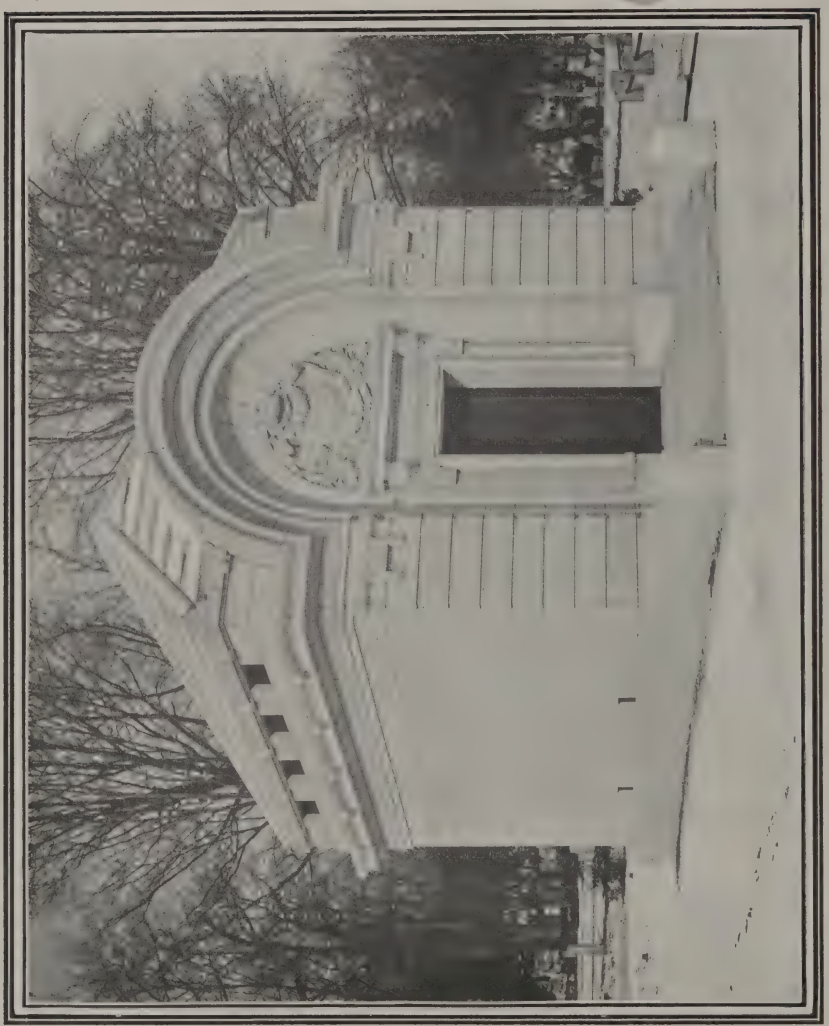


FIG. 99. TOMB.



FIG. 100. SHELDEN LIBRARY, ST. PAUL'S SCHOOL, CONCORD, N. H.

The building was only recently finished. It is built of Concord granite and has a red tile roof. There is a large central hall lighted by semicircular windows, which is used as a reading room. There are other reading rooms at either side of it. The stackroom is back of the rotunda. The small semicircular rooms either side of the stack room are used by the librarian and for cataloguing. There are two other semicircular rooms at either side of the loggia; one contains a staircase and the other a cloak room. The building is located on a point projecting into the lake. It is skirted on one side by the road leading from the upper to the lower school.



FIG. 101. SHELDEN LIBRARY, ST. PAUL'S SCHOOL, CONCORD, N. H.

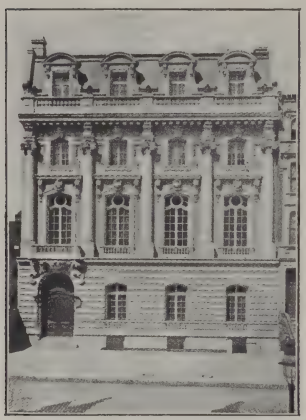
THE WORK OF THE GENERAL CONTRACTOR.



University Club.
McKim, Mead & White,
Architects.
C. T. Wills, Builder.

As our building operations become more complex and expensive, new agencies must be employed to render them more effective. With the increased cost of structures has come the necessity for more perfect mechanical appliances for handling materials, a more highly developed system of operating, and more effective capacity for handling men in large numbers. A few years ago the construction of a million dollar building was regarded as a great undertaking, but to-day there are numerous buildings in New York the cost of which involved the expenditure of several millions. The modern builder is not only architect, but engineer and artisan as well. In the field of construction he is an operator whose training demands the manipulation in a broad and general way of the whole operation, and the handling of the minutest details as well. One of the most flattering evidences of confidence in a builder is to have a contract awarded him on the merit of his work rather than the fact that he is the lowest bidder. This speaks far more than any testimonial that was ever written, for is shows in the most practical way that his work is worth more to a client at a higher price than that of his competitors. Such a compliment was recently paid to Mr. Charles T. Wills, and no man has taken so large a part in revolutionizing the building trade of New York. After the plans for the New York Stock Exchange were finally accepted, the question came up as to who should have charge of the construction. Some of the committee suggested that the work be let to the lowest bidder, but this suggestion was not received favorably by the majority. They preferred to place the important work in the care of a builder whose works are accepted as the highest type of building construction. Representing an expenditure of three million dollars, with its construction embodying the highest achievements of modern engineering skill, the Building Committee of the Exchange were unanimous in choosing for this important work Mr. Charles T. Wills, and the architect, Mr. George B. Post, heartily endorsed their selection.

The class of buildings being erected to-day is different from the character of the buildings ten years ago, and each one presents a special problem. The builder of to-day must be both engineer and architect. He must bring to bear on the difficulties which confront him a trained mind with superior powers of organization and fertility of resource.



Residence, H. T. Sloane, Esq.
Carrère & Hastings, Architects.
C. T. Wills, Builder.

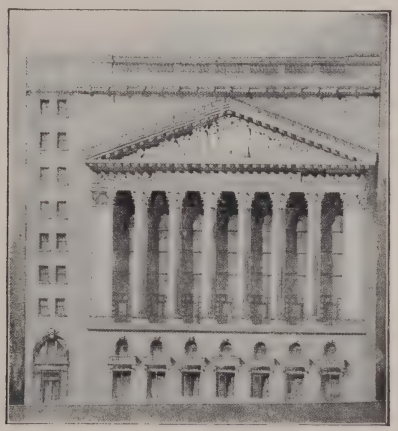
Building in New York has from the beginning been regulated by economic considerations. Ever since the city acquired metropolitan characteristics the work of the builder has been increasing in importance. In no other city in the world has so much capital been used in producing residences and structures dedicated to commercial and pleasure pursuits. The yearly cost of building in the city of New York amounts to more than the yearly cost of the food for its inhabitants. So the builder is prominent in the metropolitan field. The cause for this is not far to seek. The enormous increase in land values and the improvements made in building construction have turned the buildings erected in New York thirty years ago into simple encumbrances. It is not an unusual thing in New York to see a handsome commercial building torn down to make room for a modern sky-scraper, which will prove more profitable.

In less than twenty-five years a new architecture has been introduced and perfected among us that has practically revolutionized all previous methods of construction. The problems that confront the builder to-day are of such a widely different character from all that the world has ever known before, that they constitute a new era of engineering science. And it is because they are the most varied and difficult problems that any builder ever had to face, because they necessitate greater knowledge, experience, skill and resources than any nation of builders ever had, or dreamed of having, that no fair-



The Singer Building.
Ernest Flagg, Architect. C. T. Wills, Builder.

minded judge would hesitate to accord the modern New York builder the very foremost place in all the history of his profession. The high buildings in New York to-day are the architectural features of the city. That they are the safest in the city one has only to inquire the rates of insurance on them to know. The difficulties both of design and construction encountered in our new public and commercial architecture would fill pages, but our builders have attacked the problems of tower construction, overcome every obstacle and silenced every opposing voice. They have erected more imposing structures and contributed more new knowledge of constructive engineering than the world had learned in centuries before. We shall not attempt to describe all the work that Mr. Wills has done, or even allude to the most important of his contracts. From his 'prentice days he has had a liking for the more serious problems of the structural arts, and his ability to overcome obstacles



The New York Stock Exchange.
Geo. B. Post, Architect. C. T. Wills, Builder.

that would be the despair of less able men has secured him the favor and liking of the most prominent architects. To-day it requires that the contractor shall be not only a man of the most unquestioned finanical responsibility, but also one of superior organizing powers and fertility of resource to meet the difficulties that are sure to arise, and which cannot be foreseen. Mr. Charles T. Wills has carried out a surprising number of important contracts, including the finest office buildings, club houses, railway depots, residences, apartment houses, churches, factories and theatres, and to-day, has many large contracts on hand for office buildings particularly. Among his numerous new contracts we must not forget the building to be erected on the corner of Pine Street and Nassau, which will be an addition of which New York may well be proud.



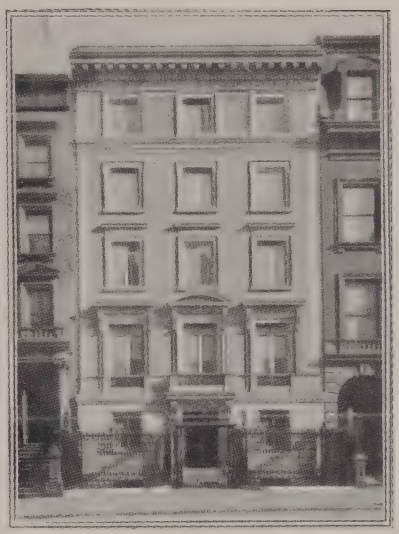
"BILTMORE."
Country House of Geo. W. Vanderbilt, Esq.
Richard Morris Hunt, Architect.

The requirements for a builder are twofold: First, he must possess a comprehensive and practical working knowledge of the building trades and all the branches thereof; and, second, he must have made a good record for himself. The mammoth strides that have been made in the past twenty and even ten years in the building business, not only in the extent of work done, but in the character and efficiency of that work as well, have caused the development of the modern builder's resources to an extent which makes this profession one of the most exacting and honored of the day. For the education of the builder, there is only one adequate school, *i. e.*, the building. College training will help him little in the practical work of construction and superintendence. A piece of terse advice on this subject given the writer by a prominent builder is worth quoting: "Take a boy with a good common school education, give him a little higher mathematics, a year or two in an architect's office, and then put him on the building. He can't expect to know it all before he goes there, and must pick it up as he goes along. It's the only way."

The builder's responsibility is greater than that of the architect, not only in the matter of fulfilling his contract, but in the question of his own remuneration, for while the architect's fee is fixed and ordinarily certain, the builder's profit is often a matter of more or less anxious conjecture until his job is finished. Thus, it is obvious that in order to conduct his business on anything like a large scale, he must be able to command a large amount of capital. Fortunate, indeed, is the builder whose reputation is so well established that his contracts are not necessarily the results of his bids having been the lowest. This, to him, means success.

One of the best and most noticeable features of the modern expansion in building operations in the United States is the growth of the country house. Time was, and not so many years ago, when the American country house, although ever so large and comfortable and delightful, could by no means rival, from an archi-

tectural point of view, the villa of Italy or the chateau of France. But with the great increase in prosperity following the Civil War, and its attendant inspiration to culture and refinement, men sought to expend their surplus wealth in the erection of country residences on a scale of elegance and grandeur that should far outclass anything of the kind that this country had ever known. Following the old world plan, many of these palatial homes have become not merely architectural features of the landscape, but also literal storehouses of art treasures and embodiments of every luxury and delight which modern ingenuity has devised.



Residence, Hon. Levi P. Morton.
McKim, Mead & White, Architects.

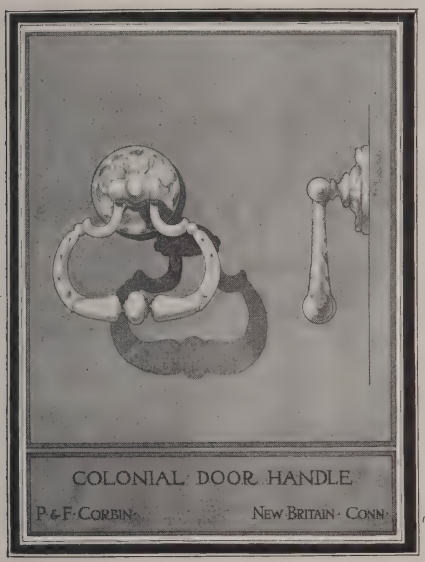
Chief among the more recent of these private buildings is the magnificent home of Geo. W. Vanderbilt, at Biltmore, N. C. There is a chain of fortuitous circumstances connected with this building which have combined to make it remarkable in many ways. In the first place it seems particularly appropriate that Mr. Vanderbilt, one of the wealthiest men in this country, a man of artistic and studious temperament, preferring the beauty and quiet of rural life to the gayety and whirl of the town, should dream of building the finest private residence in the United States, if not in the world. Then it was eminently fitting that Mr. Vanderbilt should select for his architect the man who, probably, above all others, was qualified to design such a building, the father (with Richardson) of the Beaux Arts in this country—Richard Morris Hunt. And once again was it fortunate that the man upon whose shoulders should rest the responsibility of executing this glorious creation of the Master Architect's mind, the man to solidify into stone, so to speak, the refined and carefully adjusted ideas of the designer should be Francis M. Weeks, of the long-established firm of D. C. Weeks & Son. It is surely a pleasant commentary on the well-known story of the building of Biltmore, that, during all the five long years of its construction (which Mr. Weeks spent for the most part in the saddle) owner, architect and builder worked together in harmony

that was peculiarly in keeping with the character of the building as it stands to-day.

It may readily be supposed that Biltmore was not the only large contract that Mr. Weeks executed from the designs of Mr. Hunt. A relationship such as existed between these two men could have been severed by but one thing, and in this case, when the sad day came, the relationship was but transferred from the father to the son. Biltmore was the last, in some respects the greatest of Mr. Hunt's works. He barely lived to see it completed.

In previous years Mr. Hunt has designed the country house of Mr. Archibald Rogers at Hyde Park, N. Y., and also the town residence of Mr. C. O. D. Iselin at 53d street and Fifth avenue, New York City, and the man chosen to erect these buildings was the future builder of Biltmore. Within the last five years Mr. Weeks has built three large country houses in quick succession—all from the designs of Richard Howland Hunt, who, during the last years of his father's life, was the latter's only pupil. The first of these residences was that of Oliver Harriman at White Plains, N. Y.; the second was for Richard Mortimer in Tuxedo Park, and the other is the home of Mr. Vanderbilt—Idle Hour, at Oakdale, L. I.

Among the many fine New York City residences erected by the same builder are the Hon. Levi P. Morton's house at 681 Fifth avenue, designed by McKim, Mead & White, and the King residences at Nos. 16, 18 and 20 East 84th street, owned by Mr. Geo. Gordon King and designed by Clinton & Russell. For the last-named architects Mr. Weeks was also the builder of the Morton Building at the corner of Nassau and Ann streets, New York City. Another office building which should not be excepted in this partial list of the work of a famous buider is the Anderson Building, 14 and 16 John street, near Broadway, of which Mr. R. S. Townsend was the architect. These three different classes of buildings, viz.: the large country house, the fine city houses and the high office building presented new and varied fields of building operations, and the man who would successfully master them all must needs have much experience. That Mr. Weeks remains in the front ranks of modern builders—a rank, by the way, that has been much depleted of late years—has been abundantly proved by his success in the works mentioned. Still other fields, however, bear witness to the fruits of his energy and skill. Among the collegiate works that Mr. Weeks has built are Rockefeller Hall at Vassar College, Poughkeepsie, N. Y., which was designed by York and Sawyer and the Administration Building of Drew Seminary at Madison, N. J., designed by Bigelow & Wallis. To show the kind of works done by the Weeks family of builders before Mr. Francis M. Weeks became the head and ruling spirit of the firm, no better examples could be mentioned than that beautiful example of French Gothic at 53d street and Fifth avenue, New York, known as St. Thomas' Church, and the Old Library Building of Columbus College, Charles C. Haight, architect, on 49th street, between Madison and Park avenues, New York.



An American returning recently from abroad, after an absence of some years, remarked as one of the most conspicuous changes which had taken place during his absence, the increased interest of which there was evidence on every hand, in the artistic fitting, trimming, furnishing and decoration of houses. The amount of old furniture, hangings, and the like, which an observer can see during a visit to the important Fifth avenue and Fourth avenue shops, has probably increased several fold in ten years, and the quality of this furniture has improved as considerably as its qualities have increased. Much of this larger and better interest in such things, is the result of a general improvement in taste, but much of it also is due to the direct suggestion of leading architects, who urge their clients to fit and furnish their houses either with the best that can be bought abroad, or else with some of the excellent imitations.

An architect for, instance, will plan a room, or group of rooms in a particular style—say that of the Italian or French Renaissance, and in order to carry out that style completely he will



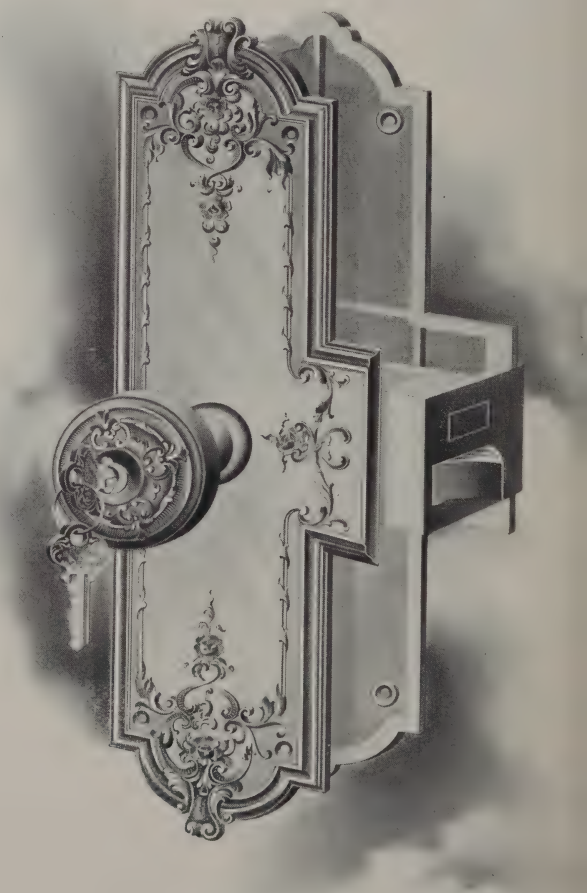
Cartouche for Front Door for O. G. Jenning's Residence. Designed by Ernest Flagg.



Interior Doors of First Floor
for
O. G. Jenning's Residence.

they do not reach modern American standards of mechanical efficiency and convenience. And this assertion is peculiarly true of the builders' hardware that goes into the contemporary American building of the better class. On the one hand, architects demand that this hardware shall be designed in keeping with any particular style, to which the general appearance of the room is to conform. On the other have the antiquity shops of Europe ransacked in the search for appropriate and fitting mantle-pieces, furniture, tapestries and screens, and the most careful selection is necessary, so that the different objects used will go well together, and will be characterized by the same feeling.

In some of the fittings of a room, however, the old appliances formerly used abroad cannot be transferred to this country in the way furniture and tapestries are transferred, partly because there is much difficulty about transferring them intact, but also, because



The Corbin Lock Set.
No. 2045. Namaurs Front Door Set. School Louis XIV.

hand, their clients demand that the appliances used shall contain the latest improvements of American ingenuity as applied to house hardware—that the locks, door-knobs and metal work generally shall not merely be well designed and carefully finished, but that their mechanism shall be simple and effective.

Among the firms of the manufacturers of builders' hardware, there are none who are more competent to meet the exacting and diversified requirements of contemporary architects than that of P. & F. Corbin, whose offices are at Nos. 11, 13 and 15 Murray street, and whose large and well equipped factories are at New Britain, Connecticut. The long experience of this firm in the manufacture of this hardware, and the large amount of work that they have done is a sufficient guarantee that their product is of the highest standard in point of mechanical excellence. Moreover, they are keeping well up to the needs of the times, both in their ability to furnish hardware of admirable design and superior finish, as well as in their ability to manufacture hardware from special designs supplied by the architects themselves. They are prepared to turn out at the shortest notice and on satisfactory terms anything that an architect may need so that the metal work of a room or a house may be in keeping with its other fittings and furniture. This demand for special designs is a comparatively recent innovation in the business of manufacturing builders' hardware, but it is obviously a demand which is growing, and which must be adequately supplied by the leading firms in the trade. It is the full appreciation of this fact which has led P. & F. Corbin to make special exertions to meet this demand in a manner which will be entirely satisfactory to their customers.

The large number of important buildings into which the artistic hardware of this firm has already been introduced testify to the quality of its work in the past. Among the buildings in New York City may be mentioned the Empire Building, Kimball & Thompson, architects; The Washington Life Building, Cyrus L. W. Eidlitz, architect; The Park Row Building, R. H. Robertson, architect; the Franklin Building, Clinton & Russell, architects; The Dakota Apartment House, Henry J. Hardenbergh, architect; Edison Building, Carere & Hastings, architects; The Shoe and Leather Bank Building, Cady, Berg & See, architects; the Park Building, George B. Post, architect, and the Vanderbilt Building, McKim, Mead & White, architects. It will be noticed that the designers of these buildings include many of the well-known architectural firms in New York City. Among the metropolitan architects, however, there are none for whom P. & F. Corbin have done so much work as for Mr. Ernest Flagg. This architect's work has been very varied, and there is no class of structure

in which examples of their metal work is not to be found. Among these buildings may be mentioned: The Singer and the Bourne Office buildings, New York City; The Corcoran Gallery of Art, Washington; St. Margaret's Memorial Hospital in Pittsburg; the Lawrence Library, Pepperill, Mass.; the First National Bank Building, in Hartford, Conn.; the residence of F. G. Bourne, Oakdale, Long Island, and residences for O. G. Jennings, Ernest Flagg, the Clark Estate and Charles Scribner, all in New York City. In almost all of these buildings the hardware was made from special designs, which is a sufficient indication of the facilities of the firm in turning out this important and growing class of work.

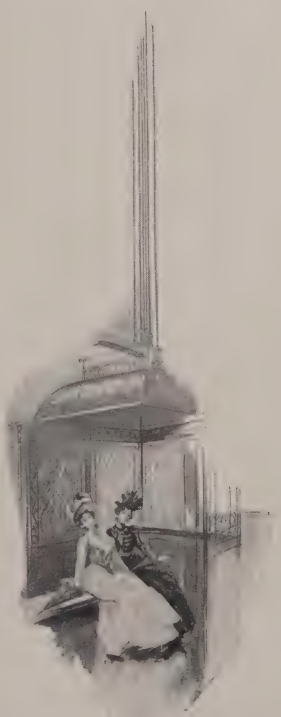


Designed by Ernest Flagg for Main Entrance of Singer Building.

A NEW TYPE OF ELEVATOR.



SINCE the modern expensive New York residence has tended to become taller, reaching in some cases as high as six stories, a need has existed for a type of elevator which is adapted to the peculiar condition of such a building. An elevator in a residence does not need to be large, neither is it being constantly used; and it seems absurd to have a boy wasting his time around the house for the greater part of the day, merely for the purpose of operating the elevator for twenty or twenty-five trips. In order to meet this need, the "Otis Elevator Company" has been introducing a type of elevator which is operated by the person using it with the help of some ingenious mechanical devices, and which dispense entirely with the elevator boy. Elevators of the same kind have been successfully in use in Paris; but the mechanism of those now being introduced by the "Otis Elevator Company" is superior to that of its Parisian analogue. The fact, however, that a similar kind of elevator is used in Paris apartment houses suggests the possibility of employing them in small flat houses in New York and other American cities.

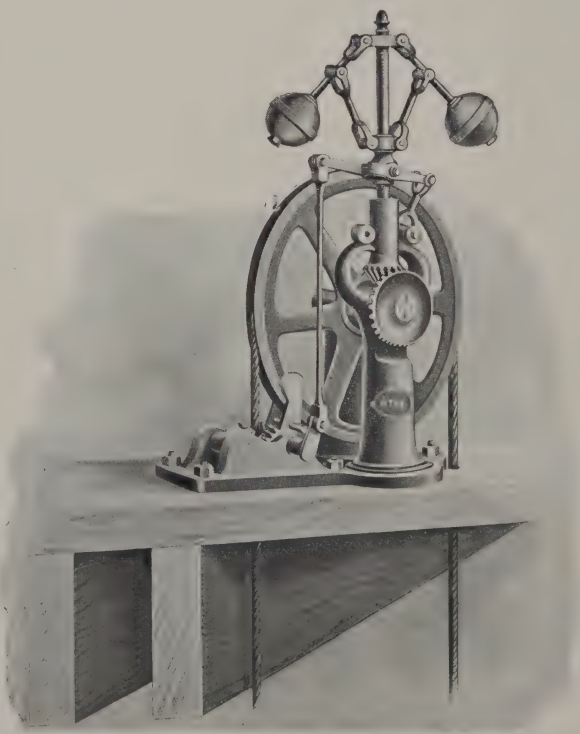


This elevator is designed to combine perfect safety with the greatest mechanical simplicity and convenience. It is a case of "Push the button and the electric motor, with automatic safety devices, does the rest." Any one with intelligence enough to count the buttons in the elevator corresponding to the landing or floors of the building, can operate the electric elevator with absolute security. The perfecting of the Electric Elevators



is another feather in the cap of the "Otis Elevator Company," and it is needless to say that within the comparatively short time during which they have been used, these elevators have become extremely popular.

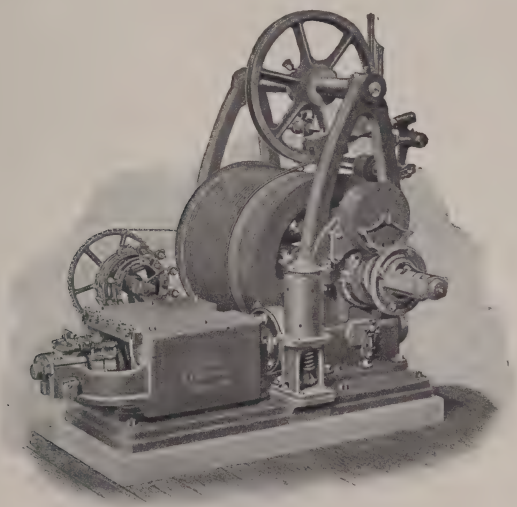
As stated above, the system of operation is entirely by means of push-buttons. After entering the car and closing the door, the passenger presses the push-button inside the car, which corresponds to the landing at which he desires to stop, and the car takes him there and stops automatically. Simple, isn't it? "Yes," the reader will say, "that is simple enough. But think of the danger of having an elevator which can be operated from any floor. Suppose, for instance, the car is at the fourth floor, the landing door is open, and just as I am stepping into the car somebody on the first floor pushes the button, the car descends and I am caught between the under side of the car roof and the unyielding floor."



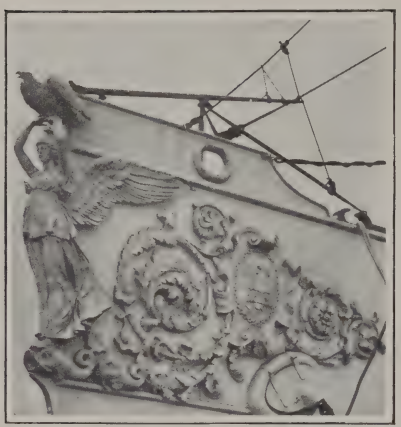
In making this objection, the reader fails to remember that the elevator we have been describing is manufactured by the "Otis Elevator Company," which has been making elevators since 1856, which is the leading manufacturer of elevators in the whole world, and which can truthfully state that, during all the time it has been in busi-

ness, not a single passenger has been seriously or fatally injured. That is a proud boast, and it is all the more wonderful when you take into consideration the fact that in New York alone, the elevators made by the "Otis Company" carry more passengers than all the New York elevated roads.

An accident such as you have imagined is absolutely impossible in one of the "Otis Electric Elevators," because as long as the landing door is open, the car cannot be moved, and in addition, the door cannot be opened until the car comes to a full stop at the landing. This is due to a system of automatic door-locking devices connected with the operating mechanism, by means of



which all danger of falling into the shaft or being struck by the car is eliminated. Furthermore, while the car is in motion, or when it is at a landing, and the door is open, the landing push-buttons are inoperative, allowing full control of the car to its occupant. These safety devices, and the fact that the car is at all times under control of the passengers, does away with the necessity of an attendant, and affords conclusive evidence that the elevator boy will soon be superseded by the push-button in the private residences, as the horse is being superseded by the automobile.



Ornamental design for the bow of the U. S. S. Cruiser Cincinnati. Designed and manufactured by The Hayden Co.

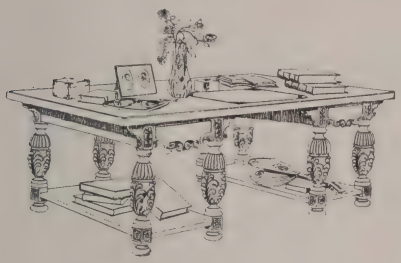
The collecting of antique furniture began some time ago, when it was difficult to obtain good designs in any other way. With the gradual improvement of taste, which has been so noticeable in many departments of American life, people who desired furniture of simple outlines and free from superfluous and showy ornament found the mahogany and oak pieces discarded by our predecessors so much superior to those of contemporaneous manufacture, that they began to make a systematic search for them and to buy them wherever they could. This search was a perfectly natural one, and was a justifiable protest against the ugly forms and the over-elaboration of the current machine-made furniture; and it has led to radical changes in the design and construction of much of the furniture that is used in the houses of people of refinement or wealth. The best contemporary dealers in furniture make a specialty of securing old pieces belonging to the best periods of Italian, French and English interior decoration.

But this is not all that is required of the best contemporary collectors and manufacturers of furniture. In an elaborate modern residence, all the furnishing of any one room should belong to the same period, and be planned to occupy a particular place and to produce a certain effect. It is sometimes very difficult, if not impossible, to find old pieces that meet precisely the required conditions, and, as a matter of fact, while there is an abundance of ordinary pieces



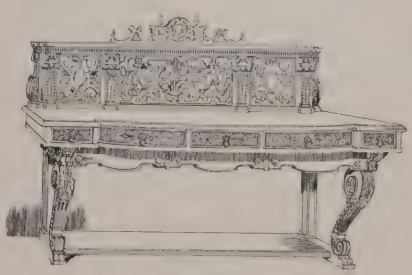
Ornamental design for the stern of the U. S. S. Cruiser Cincinnati. Designed and manufactured by The Hayden Co.

of antique manufacture, it is comparatively difficult and costly to obtain pieces of really rare and distinguished design. The consequence is that while dealers and collectors generally prefer the old furniture, because of the qualities of the wood, and its sober air of destinction, the more enterprising of them are not satisfied merely to collect old examples. They are prepared, not only to copy such pieces with the utmost fidelity and skill, but they make a specialty of designing and manufacturing furniture, which are as good as the old pieces in outlines and proportions, and which are more precisely adapted to modern needs. The consequence is that both the architects and their clients are tending more and more to give their business to firms and companies that are equal to any emergency in the way of special designs, and who can make in their own shops pieces which they cannot supply out of stock.



Library Table.
Designed and manufactured by
The Hayden Co.

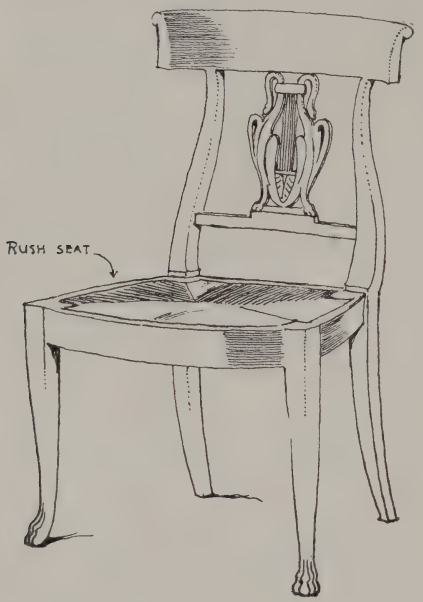
The dealers in furniture of this class are obliged consequently to have a most diversified and complete organization. They are prepared at once to carry out the designs of architects, to interpret the ideas of customers, and to assume the responsibility themselves for the entire furnishing and decoration of the most elaborate houses. They have in their draughting rooms designers who have devoted their lives to the study of the forms and proportions of good furniture. They have in their shops workmen, who have been in their employ for years, and who are in sympathy with their methods. They can control the pieces of furniture they turn out to the smallest detail of their design; and as every one knows, perfection of detail is supremely necessary in the interior arrangements of a house. They are prepared, in addition to supplying furniture, to do all kinds of architectural cabinet work, and if desired, the decorative painting and drapery of a house. Such organization cannot be put together in a few months; it must be the growth of many years, and the product of good taste, labor, study and experience.



Sideboard.
Designed and manufactured by
The Hayden Co.

It is safe to say that among

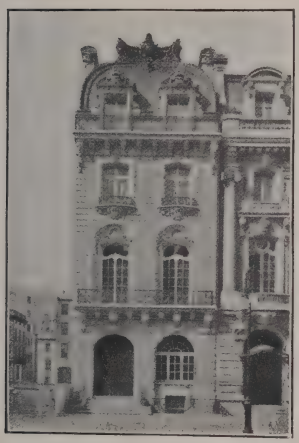
the furniture dealers, designers and makers of the kind above-described, the work of none is more generally and favorably known than that of "The Hayden Company." This company formerly occupied a building on the Stewart property, on the north side of 34th street, near Fifth avenue; but the destruction of the building to make way for a more modern structure, has prompted the removal of the company to still more desirable quarters at 520 Fifth avenue, between 43d and 44th streets. It has done work for many of the best architects in the city—among them Mr. Ernest Flagg, who awarded them contracts for a large part of the work in the residence of Mr. Fredk. G. Bourne, at Oakdale, L. I.; in that of Mr. A. C. Clark, on Riverside Drive, and in the Connecticut Mutual Life Insurance Building, at Hartford, Conn.



Rush-bottomed Chair.
Designed and manufactured by
The Hayden Co.

We present herewith illustrations of some representative work which has been designed and manufactured by "The Hayden Co." Of this work there is none which has met with more general approval than the ornamental decoration which it has furnished for the U. S. cruisers, the Cincinnati and Olympia. The ornamental figurehead and sternpiece, which are reproduced in this article were carved in wood for the Cincinnati; and this decoration was so satisfactory that the design was adapted to suit the different conditions of the Olympia. In the second case bronze was used instead of wood. It is much to be desired that other vessels in the U. S. navy will be similarly ornamented.

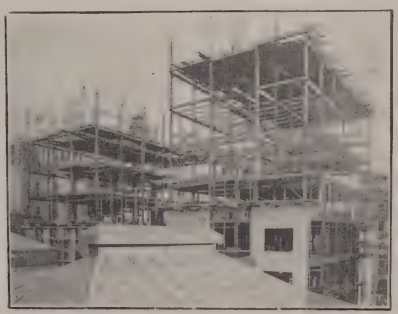
SOMETHING ABOUT STEEL CONSTRUCTION.



Residence, O. G. Jennings, Esq., 7 East 72d Street, New York.

Probably the most spectacular and popularly interesting sight connected with modern American architecture is the bare steel frame of a contemporary "sky-scraper," before the wall or the floors are laid. The public have a vague impression that steel construction is the most important American contribution to the art of fireproof building, and this stimulates them to take an interest in a spectacle which is in itself curious and extraordinary. It is always pleasant to have a difficult scientific or engineering structure exposed plainly to the view; and a careful observer can deduce a tolerably complete conception of the purposes and advantages of steel construction from a careful scrutiny of one of the steel skeletons, which may be seen arising every year in the central and lower part of New York.

He would notice, for instance, during the first stages of the job that caissons were often sunk to bed rock so as to obtain sufficiently secure foundation for the enormously heavy structure that is to be reared above. He would notice also that the columns and girders of the lower stories are much heavier than those above; and he could not help noticing finally that the walls instead of being built from the ground up, are generally started at different levels, betraying the fact that the walls of each floor are carried by the girders, which mark that story. And he could consequently infer the threefold merit of this method of construction: (1) that since the walls and partitions are carried on the girders they do not appreciably increase in thickness with the height of the building; (2) that it is the great strength of the material, which permits



Connecticut Mutual Building, Hartford, Conn.

the structure to be carried to such great heights; and, (3), that construction is facilitated by the fact that if the foundations are placed on difficult ground, the load may be concentrated upon the most available points.

It is obvious that the problems presented by these steel structures are mainly engineering problems; and that an architect in planning a building of this kind cannot get along without expert engineering assistance. The importance of such assistance can be shown by a short description of some of the conditions, which a stable structure of steel must meet. The arrangement of the columns, both of the outer walls and of the interior distribution must first be laid out upon a general plan, keeping in mind the girder connections, which with columns form the skeleton of the building. Then a plan must be made of each floor, and the area carried by each column and girder computed. Next, beginning at the top, the weight of the roof, with its load of snow or wind is first computed, and since this weight rests upon the columns of the top story they must be proportioned accordingly. In calculating the size of the columns of the floor below, it must be reckoned that they carry the load coming to them from the columns of the top floor, together with the weight of the floor, and its live load; and this method must be continued from the roof to the foundation. The foundation itself must, of course, be proportioned to the weight of the whole structure.



Connecticut Mutual Building,
Hartford, Conn.



Staircase,
Bourne Office Building,
New York.

The amount of assistance, which architects receive from engineers outside their offices in making these calculations and in drawing the plans based upon them varies in different cases; but it is obvious that the work of actually erecting these buildings requires the services of a contractor,

who is also an engineer—a necessity which has led to the increasing importance of firms of engineering contractors, who make a specialty of work of this kind. These firms are prepared either to work in coöperation with architects, and execute their plans for buildings which require large amounts of structural steel; or they are prepared, if necessary, to furnish as well as to carry out the designs for given buildings. They are prepared, moreover, to erect such structures in a space of time, which, considering the amount of material used, and the extent of the structure, seems to be extremely small. They have obtained this facility, and are able freely to handle the heavy steel columns and beams at considerable heights because of improvements in the form and arrangements of the steam hoisting engines and the other erecting machinery. For it must be remembered that the actual work of constructing steel frames offers as many and as complicated and difficult problems as their designing. An office that accepts and performs these jobs on a large scale requires an extraordinary amount of expert knowledge and experience, and an organization of the most complete and varied character.



Staircase,
Bourne Office Building,
New York.

One of the most important of these firms of contracting engineers is that of Milliken Bros., with offices in the Bowling Green Building, New York. The house of Milliken has been established since 1857, although it has been known as Milliken Bros. only since 1887. It is one of the oldest contracting and engineering houses in this country, and has an enviable record for integrity and ability. The amount of work performed by this firm may be gathered from the fact that it employs in its main offices alone about one hundred engineers and draughtsmen, and still can scarcely keep abreast of its orders. By means of its excellent organization and facilities, it can execute orders very rapidly, turning out the structural steel work for an entire building in five or six weeks. There is no part of the world in which structural and ornamental iron and steel work is used in which it does not do business, for it has branch offices in Honolulu, H. I.; San Francisco, Cal.; Mexico City, Mexico; Havana, Cuba; London, England; Cape Town, South Africa; and Sidney, Australia. The firm designs and constructs iron and steel work for armories, bridges, docks, office

buildings, dwellings and factories. It is prepared to furnish, besides all kinds of structural iron and steel, automatic fireproof and burglar-proof doors, balconies, balustrades, bell-towers, canopies, chimneys, smokestacks, derricks, metal elevator enclosures, fire-towers, fountains, gates and all kinds of ornamental work, either from designs furnished in its office or by the architects. The illustrations are all taken from the work which this firm has done for Mr. Ernest Flagg, which includes the Singer Building, the Bourne Building, the Connecticut Mutual Life Building, the Lawrence Library, and the residence of O. G. Jennings. Among the other buildings, the steel work for which was furnished by the same firm may be mentioned the New Maternity Hospital at Second avenue and 17th street, the Siegel-Cooper Building, Hotel Majestic, Hotel Royalton, the N. Y. Clearing House, the Reade St. and Waterside Stations of the Edison Electric Illuminating Co., the Dun Building, and the Morgenthau Building, 19th street and Sixth avenue, all in New York; the 66th Street Power Station of the Edison Electric Illuminating Co., of Brooklyn; the Wainright Building, St. Louis; 13th and 14th Regiments' armories in Brooklyn; the Buffalo Street Railway Power Station, the Atlas Portland Cement Company's Building, at Northampton, Pa., the Oahu Sugar Company's Boiler and Grinding Mill at Honolulu, and eight other sugar mill buildings. These facts are the best possible testimony to the ability of the firm to perform its varied work cheaply and efficiently.



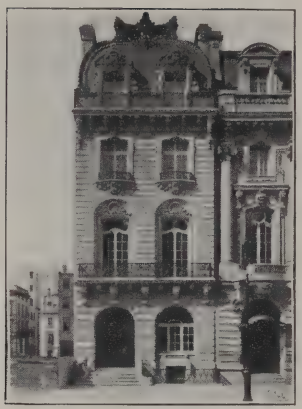
Mills Hotel, No. 1.

The whole history of architecture is a sufficient proof of the assertion that there is no great and permanent architecture without the use of stone. The only builders who used clay were the Babylonians and Assyrians; and that is the reason why the architectural remains of their civilization have been ground into dust-heaps instead of remaining comparatively strong and permanent like the stone monuments of Egypt. And so it is with the other great building nations. The Greeks, the Romans, the Mediaeval Frenchmen, and the Italians and Frenchmen of the Renaissance all used stone for their substantial buildings—the buildings that have a permanent place in architectural history. And the reasons are obvious. Stone has the value of durability. In addition it has the value of being massive and structural. It gives the impression of weight, substance and stability. Finally, it has the value of texture and color. This is an aspect of the use of stone which, as yet, has been neglected by American architects; but in all the most important periods of architectural history, stone was used quite as much with an eye to its surface as its structural qualities. Stone, as has been said, is the "epic" material, and the choice of any other has at all times acted as a hindrance to work of the highest character.

Of the increasing use of many varieties of stone in the building work of this city, there can be no manner of doubt. The brown stone, once so universally the favorite of New York builders, has indeed, been entirely superseded; and for a while its place was for the most part taken by brick; but at present the tendency is running strongly in the direction of



Residence R. Fulton Cutting, Esq.



Residence, O. G. Jennings, Esq.

various kinds of light stone—stones of excellent appearance and first-rate architectural value. Even the houses in which brick is used commonly possess a much larger proportion of stone trimmings than formerly; but in a great many cases, no brick is now used at all. This is not only true of public buildings, such as the New Hall of Records, the Appellate Court House, and the Public Library, but it is also true of many office buildings and private houses in all parts of the city. Many of the office buildings, such as the Western Union, the Tribune, and the Mills Buildings were constructed chiefly of brick; and their inferiority of appearance arising from the character of the material, to such structures as the Times and the Union Trust Company Buildings, is considerable and conspicuous. Among the more recent "sky-scrapers," the buildings like those of the Washington Life and the American Exchange National Bank, which are constructed entirely of stone, present a more dignified and impressive appearance than one like the Broad Exchange Building, in which a light brick is used above the lower stories. One of the few buildings on Broadway, in which the combination of a good stone with brick has proved effective, is the Singer Building. The same tendency toward the successful use of stone appears still more strongly in the modern New York residence. It is well known that during recent years the average cost of each private dwelling, erected in Manhattan, has increased from less to $20,000 to almost $40,000; and this enlargement of means at the disposal of architects has led, among other things, to the increased use of stone. Among the notable examples of handsome dwellings, in which stone has been used, may be mentioned the residence of O. G. Jennings, on East 72d street; of Isaac Sterne, of Henry T. Sloane, of Senator Clarke, at Fifth avenue and 78th street; of Charles T. Yerkes, and of many others. In fact, one may be tolerably certain that in almost every case when the designer for a rich man of a sumptuous and luxurious mansion has a chance, he will use stone; and this is par-



Singer Building.

ticularly true of the architects who have learned their profession in Paris.

One reason, however, for the increased use of stone is the fact that the product has been cheapened by the much more extensive employment of machinery. It was not so many years ago that very little machinery of any kind was used in the dressing of stone; but a visit to a modern stone yard, such as that of J. J. Spurr & Sons, at Harrison, N. J., would tell a very different tale of the methods of the present day. These works, which are most extensive and most perfectly equipped, are operated entirely by machinery and steam. The great masses of rock are carried to all parts of the building by traveling cranes; they are cut into the sizes desired by saws; and planed by planing machines. The amount of hand labor used is reduced to the lowest possible margin, and the consequence is that a stone yard, such as that of J. J. Spurr & Sons can put stone on the market at a price and deliver it with a promptness which was formerly unknown. Their works being located on the Passaic River and having a railroad switch into their yard, they are enabled to ship their product by vessel or rail, according to the location of the building they are erecting. Among some of the important work done by this firm are as follows:

By Ernest Flagg, Architect: Residence of R. Fulton Cutting, Madison avenue and 67th street; Mills Hotel, No. 1, Bleecker street; residence of O. G. Jennings, No. 7 East 72d street; Singer Building, Broadway and Liberty street; Bourne Building, Liberty street, New York City, and Conn. Mutual Life Ins. Co. Building, Hartford, Conn. By McKim, Mead & White, Architects: Interior hall and stairs of H. C. Villard residence, Madison avenue and 50th street; residence of Henry Fahnstock, East 51st street; residence of J. Coleman Drayton, Fifth avenue, New York City; Stickler Memorial Library, Orange, N. J., and St. Peters Church, Morristown, N. J. By Geo. B. Post, Architect: World Building, Park Row; Mills Building, Broad, Wall and Exchange Place; Schermerhorn Building, Broadway and Fourth street, New York City. By Brite & Bacon, Architects: Residence of George Crocker, Fifth avenue and 64th street, New York City. By R. H. Robertson, Architect: Mohawk Building, Fifth avenue and 21st street; Madison Avenue M. E. Church, Madison avenue and 60th street; residence of W. L. Skidmore, Madison avenue and 67th street; residence of J. J. McCook, West 54th street; N. Y. Academy of Medicine, West 43d street, New York City. By Edward H. Kendall: Residence of Robert Goelet, Fifth avenue and 48th street, New York City. By Bruce Price, Architect: St. Lawrence Building, Broadway and Cedar street, New York City. By

Clinton & Russell, Architects: Fahy's Building, Maiden Lane and Liberty street; Battery Park Building, Bridge, Pearl and State streets; Phelps, Dodge & Co. Building, John and Cliff streets; Woodbridge Building, William and John streets; residence of Charles W. Clinton, No. 39 East 57th street, New York City. By H. J. Hardenbergh, Architect: Waldorf Hotel, Fifth avenue and 33d street, New York City, and Newark Gas Co. Building, Broad street and Central avenue, Newark, N. J. By Richard M. Hunt, Architect: Residence of W. V. Lawrence, Fifth avenue and 78th street, New York City. By Renwick, Aspinwall & Owen, Architects: Christ Church, Amsterdam avenue and 71st street, New York City. By De Lemos & Cordes, Architects: Kuhn, Loeb & Co. Building, Pine street, New York City. By Augustus Laver, Architect: Residence of Hon. J. C. Flood, San Francisco, Cal. By Schickel & Ditmars, Architects: Residence of Wm. Pickhardt, Fifth avenue and 71st street; St. Vincent Hospital, 11th street and Seventh avenue, New York City. By Howells & Stokes, Architects: American Geographical Society Building, 81st street and Central Park West, New York City. By R. Maynicke, Architect: Mercantile Building, Fifth avenue, 17th and 18th streets; Mercantile Building, Fifth avenue and 19th street; Mercantile Building, Broadway and 13th street, New York City. By W. Wheeler Smith, Architect: Mercantile Building, Broadway and Third street, New York City, and many others.



Connecticut Mutual Insurance Building, Hartford, Conn.

MODERN PLUMBING.

ASSUREDLY there is no department of the work of building construction in which progress is more rapid and steady, and results more assured than in the department of plumbing.

In all the different branches of the building construction there is not one that has enlightened the public more than the plumbing, both from a sanitary condition and a decorative appearance. It has all been revolutionized mostly this last ten years, so one would say we are still in our infancy regarding sanitary plumbing.

Every body wants good plumbing; almost every body knows what good plumbing is; and inventors and business men have been, and are the most active agents in originating and introducing improved sanitary devices. They all realize that no matter how well built, a house is unsafe as long as the plumbing is imperfect, and the money which the public is willing to spend for the purpose is every year used with better results.

In order to obtain some notion of improvements which have recently been made in sanitary devices, the writer called recently upon Mr. John Boyd, of No. 274 Columbus avenue, who, probably knows as much about practical plumbing as any man in the United States. Mr. Boyd was perfectly willing to talk about his favorite topic, and agreed to do so, provided the writer would keep him in the background, saying: "I prefer to let my work talk for me," which, as every one is aware who is acquainted with Mr. Boyd's work, does talk most eloquently on his behalf. It has been placed in many of the most important buildings in New York, and has uniformly given satisfaction.

Among other things, Mr. Boyd remarked that the great advance in plumbing and sanitary appliances generally, had come about within the past ten years.

But let Mr. Boyd tell the story in his own way:

"A short time ago I made a smoke test on a large office building, of which I am doing the plumbing work. I was informed by the owners that every part of the plumbing was in perfect condition, but it did not take me long to convince them, by their own personal observation, that they were not so up to date as they thought.

"I discovered a large brick cesspool in front of the cellar underneath the floor, into which all the sewerage matter discharged. It was constructed in such a manner that it could never be entirely emptied. All the drains were built of brick, where a great many leaks were discovered; there were no traps on the leaders, allowing the gases to pass through them and enter through the open win-

dows above the gutter, and many other leaks in the iron soil pipe. Several of the toilet rooms were ventilated by a small 1½-inch lead pipe, branched from the soil pipe, and brought to the external air underneath the wondows on the different floors.

"The question was asked me by the owners what I should suggest. I recommended that modern plumbing should be executed in such a building. My views on modern plumbing in any building are that it should be constructed in such a manner as to have proper light and ventilation.

"All the main, soil, waste and ventilating pipes are to be carried through the roof, and the vent branches of the different fixtures to be connected to the crown of the traps or bends, and continued to the nearest main ventilating pipe. The wastes of water closets to be connected independently to the soil lines, and other fixtures may be branched into each other and make a separate connection to the soil line.

"The drainage and sewerage pipes may be either of extra cast-iron pipe with extra heavy fittings, or galvanized wrought-iron pipe with galvanized recessed drainage fittings; but it is more durable to use extra heavy cast iron for drainage purposes, when same are placed under ground.

"For instance, I wish to give a few explanations of the different plumbing fixtures and the various advantages of each.

"WATER CLOSETS.—The wash-out closet, being introduced as the first of our modern plumbing closets, was constructed of one piece of earthenware, but after a few years we improved it by introducing a syphon jet closet, which has advantages over the old wash-out closet used with the cistern. The wash-out closet depended upon the flushing capacity of the rim constructed in the earthenware, and this was very objectionable, on account of the noise when being flushed. Often it was not sufficient to cleanse the trap properly; this was sometimes caused by the valves of the cistern not being properly constructed.

"The syphon-jet closet is constructed similar to the wash-out closet, but has the additional syphon partition made so as to allow the flush of closet to enter half into the trap and half into the flushing rim of the bowl—creating a syphonic action in the trap, which is more reliable in cleansing on account of its construction.

"Of recent years vitreous earthenware has been substituted for common glazed earthenware to prevent crazing.

"The Kenney Flushometer has its advantages over the cistern of the overhead closets, in that it has a solid column of water immediately close to the bowl, and such an arrangement entirely overcomes the several imperfections, which attend the use of a disconnected stream of water released from an overhead tank, as in the case of the numerous other types of apparatus in use at the present time.

"It is designed for use on either direct pressure or tank systems, and to work with ease and efficiency under any pressure, giving a quick flush of large volume at the start, and finishing with a slow after-flush of small volume.

"This system dispenses entirely with the overhead flush-tank, which is a necessary feature of nearly all water closets now on the market, and is highly suitable for dwellings or other buildings in

which there may be closets on each floor, while only a single supply tank is located in the attic or roof space. It is only necessary to connect each closet to the main pipe by a branch flush pipe.

"LAVATORIES.—There is a great difference of opinion as to what should be used in different buildings now being constructed. The old marble slabs with earthen bowls attached with clamps have become things of the past, being superseded by solid earthenware in one piece. The advantages are that the bowl and slab being made of one solid piece of earthenware, which does away with plaster joints between bowl and the slab, and the material being of a non-absorbent nature and the porcelain bowl heavier in construction gives an advantage over ordinary bowls, for there is no chance for any separation to take place between bowl and slab. There is no doubt this makes a more durable and substantial fixture, which harmonizes with the material of other fixtures, and in due justice to decorators of other materials, I can safely say they can duplicate any decoration required. Lavatory fittings for waste and supplies are too numerous to mention at this time, but they have advanced as rapidly as other sanitary appliances.

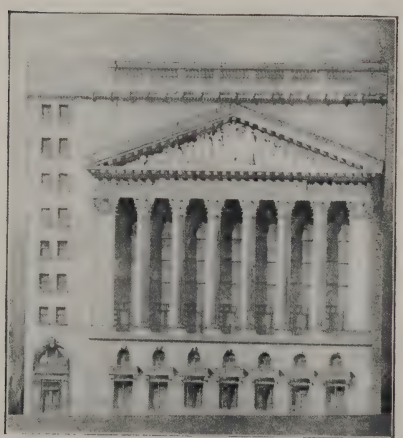
"BATHS.—The manufacture of baths has created more interest in plumbing industry than any other material, for the reasons that a piece of solid porcelain earthenware of such large magnitude, exposed to such extreme temperature in the kilns, finished in such perfect condition, far surpasses any that ever have been imported, both from workmanship and decorative appearances, thus giving credit to American industry. Baths are now being constructed in one solid piece, and resting on floor, thereby doing away with legs. Moreover, I must make mention of enamelled iron baths, which have reached the same height of perfection as solid porcelain baths, both as regards manufacture and decorations.

"CONCLUDING, I would say that the improvements as regards rough plumbing now put in buildings are most rapid. Originally lead was used for drainage, soil, waste and supplies. About 1870 cast-iron pipe and fittings of a light weight, now called "Standard," was used, and to protect from decay, were tar-coated. Later, cast-iron pipe and fittings of heavier grade, called "Medium," were manufactured to take the place of "Standard." At this time was also commenced the manufacture of a grade of cast-iron pipe and fittings called "Extra Heavy," which is the grade now used exclusively in New York City, and is the only grade of pipe and fittings which is allowed in construction of plumbing system by the New York Building Department.

"Of recent years, a number of leading architects and plumbers have been advocating the use of galvanized wrought-iron pipe and drainage fittings for soil, waste and vent systems. It is claimed for the galvanized wrought-iron drainage system that more reliance can be placed on a screw joint than on a lead caulked joint. At the present time, drainage soil, waste vent and supplies for plumbing system can be installed either of cast iron, wrought iron or brass, as architect or owner may desire, and when constructed in accordance with rules and regulations of New York Building Department, there is no reason why either of these above-mentioned materials cannot be used and work made perfectly sanitary in all parts."



IT is an astonishing feature of the building business that some engineers and architects permit the use of brands of cement which are neither well established nor endorsed by competent chemists. Notwithstanding the important part hydraulic cement plays in every structure, whether of stone or brick, builders sometimes overlook the importance of specifying the use of the "Dragon" brand of Portland cement. This brand has been on the market for over a dozen years, and its increased sales demonstrate the endorsement given it by all users of good Portland cement.



THE NEW YORK STOCK EXCHANGE.

The multiplication of mills for the manufacture of Portland cement within the past few years is an indication of the increasing popularity of this American product so far as they were constructed as legitimate business enterprises. When Dragon Cement was first placed on the market, the annual output of American Portland was 275,000 barrels per annum from all the mills, and this had increased to over 12,000,000 barrels in 1901. The finished product of many manufacturing establishments should be carefully examined by the users of cement. If any plants were built by speculators with a view of disposing of them for profit, the quality of the product made by inexperienced hands might be very inferior and treacherous to users.

There are few cities of importance throughout the seaboard states and contiguous territory from Maine to Texas, wherein "Dragon" cement has not been extensively used. Not only does "Dragon" enter into the foundations and superstructures of build-

ings, but it is well adapted and used for sidewalks, curbing and street pavements. Many of the prominent railroads have used "Dragon" in the construction of their bridges and other heavy masonry. For the foundations of their freight houses, depots and platforms, thousands of barrels of "Dragon" Portland have been satisfactorily used.

The United States Government selected "Dragon" cement for the erection of many of its heaviest fortifications and sea walls and other harbor work. The building of the new Custom House in New York City in 1901 calls attention to the fact that this same company furnished the cement used in the construction of the old Custom House in 1840. The Lawrence Cement Company furnished the cement used on the Wall Street building in the forties, and are now supplying their "Dragon" Portland brand in the erection of the new Custom House, at Bowling Green and the Battery. It is used as well for the foundations of the new Stock Exchange, the Chamber of Commerce Building and the East River Bridge, and the Muscot Dam, on the Croton Water-shed.



LAWRENCE CEMENT CO.

The extensive cement plant where "Dragon" brand is made, is situated in the Lehigh Valley on the line of the Central Railroad of New Jersey. The company has acquired the property on which the first cement stone was discovered. They control about two hundred acres of land, containing an inexhaustible supply of the best cement rock in the Lehigh Valley, and own also enormous deposits of a superior quality of limestone. Their quarries are admitted to be superior to most others in that region. They are open to the inspection of engineers and architects who would like to know something regarding the inside merits of "Dragon" cement which they should specify and use.

"Dragon" cement exceeds all the requirements of the American Society of Civil Engineers, both for neat and sand tests. The testing laboratories of the best well-known chemists confirm these facts.

Scientific examination of the natural rock, sampling of the composition and complete analysis of the finished product are made every hour throughout the day and night, as the cement plant runs continuously the whole twenty-four hours.

The company's laboratory tests include not only the chemical

analysis of the cement, but also the cold water, steam and boiling test and the usual tests for tensile strength, both neat and with sand. "Dragon" cement exceeds by a liberal percentage the maximum standard for fineness, and strength, and its specific gravity comes fully up to the standard.



A TRAIN OF 27 CARS TO ONE CUSTOMER IN THE WEST.

"Dragon" cement has attained that degree of perfection in its manufacture which places it beyond rivalry. It is in a high class by itself. The company's assurance goes with every barrel of "Dragon" Portland. The present managers of The Lawrence Cement Company have the benefit of the experience of more than fifty years in the manufacture of cements, during which time the company has superintended the making of over 20,000,000 barrels of Portland and natural cements. If wisdom follows experience, it should be conceded that their "Dragon" cement ought to possess all the excellent merits attributed to this popular brand.

"PARAGON" PORTLAND.

Another brand of Portland cement made by this company is known as "Paragon." Its increased shipments every year prove its value by engineers and contractors. "Paragon" Portland being uniform in fineness and having excellent sand carrying capacity, makes a very plastic mortar, which masons are pleased to use. "Paragon" answers the demand of builders for a Portland cement that possesses a tensile strain of about 500 lbs. to the square inch in one week.

"Paragon" recommends itself for use to bricklayers and other masons, as it makes a very safe mortar that is readily applied with the trowel.

Quite a number of engineers and contractors prefer a moderately high testing cement like the "Paragon," instead of the record-breaking brands of extremely strong tensile strength.

The greatest usefulness and moderate cost of a standard cement are not always nor easily combined in one brand. "Paragon" Portland possesses these precise particulars, and for this reason is very popular with architects in their specifications.

"Paragon" is an easy-selling brand, and gives satisfactory results in the construction of culverts, conduits, cistern-linings, cellar floors and sewers.

By many of its users, "Paragon" is regarded as one of the best Portland cements in the market, even in comparison with higher

grades, and for nine years past has been handled with increasing pleasure and profit to themselves and excellent results in the work performed.

IMPROVED SHIELD.

To meet the requirements of builders for a good cement of less strength and quicker setting properties than Portland possesses, the Lawrence Cement Company have manufactured a brand for the last eleven years known as "Improved Shield." It is an excellent cement, and in many places gives as good satisfaction as some brands of Portland. For fineness, it equals any other cement, except high-grade artificial products, and far surpasses most brands of so-called Rosendale cements.



READING TERMINAL.

"Improved Shield" invariably shows the following good record: Ninety-nine per cent. passes a No. 50 sieve; 95 per cent. passes No. 100 sieve; 81 per cent. passes No. 200 sieve. What Rosendale cement can equal this? For strength in 24 hours, "Improved Shield" breaks neat over 100 pounds; in seven days the breakage averages 175 pounds, and 275 pounds in 30 days. With two parts sand, its tensile strain is 100 pounds in seven days; 200 pounds in 30 days and 400 pounds in six mouths.

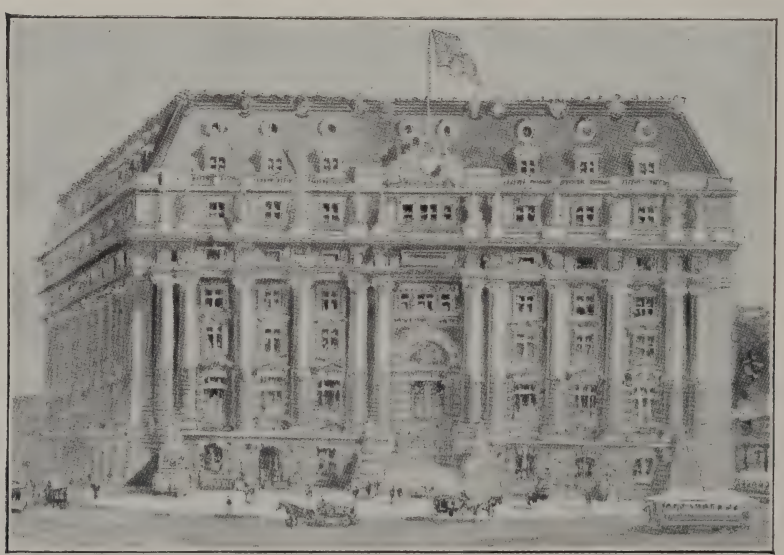
"Improved Shield" is the strongest of natural rock cements, and its adhesiveness and resistance to compression have won for it a first place among the best enduring cements.

"Improved Shield" can be relied upon to grow harder every year, and produce the strongest work for superstructures.

"Improved Shield" cement is manufactured with the same care and attention in all details that are given to higher-priced cements. It has surpassed the expectations of architects and shown valuable qualities, exceeding the guarantees of its manufacturers.

The conclusion of the whole subject is that the best business interests of architects, engineers, contractors and other users of hydraulic cement will demand that only reliable, standard brands be employed in their work. This should direct their attention to the experience and long time service of the cement manufacturer. Some business men are willing to take large risks in order to save a few dollars. They frequently sacrifice a reputation for reliability without adequate returns. In order to place its product on the market already occupied, most new business enterprises are compelled to offer inducements in one form or another. Either the new goods must be better than those already for sale, or the price must be lower. The risk to the purchaser in handling the new product must be more or less commensurate with the inducement.

Good judgment demands the best material procurable in the building line. The reader may feel sure he is using excellent judgment when he specifies that the cements mentioned in this article be used on all future contracts.



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Madison Square Garden	McKim, Mead & White, Architects.
Metropolitan Club	McKim, Mead & White, Architects.
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Washington Life Insurance Building	Cyrus L. W. Eidlitz, Architect.
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National Shoe and Leather Bank	Cady, Berg & See, Architects.
Hartford Fire Insurance Building	Cady, Berg & See, Architects.
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Netherlands Hotel	W. H. Hume & Son, Architects.
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R. H. Macy & Co.	Schickel & Ditmars, Architects.
Lakewood Hotel	Schickel & Ditmars, Architects.
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New York Clearing House	R. W. Gibson, Architect.
Onondaga County Savings Bank, Syracuse, N. Y.	R. W. Gibson, Architect.
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SCOTT & BOWNE BUILDING	200,000	SCHICKEL & DITMARS
SETON SANITARIUM	100,000	SCHICKEL & DITMARS
MUTUAL LIFE INSURANCE CO.	250,000	CLINTON & RUSSELL
WOODBRIDGE BUILDING	450,000	CLINTON & RUSSELL
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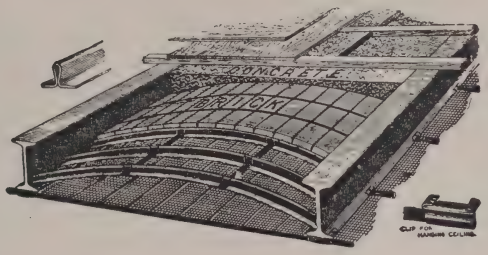
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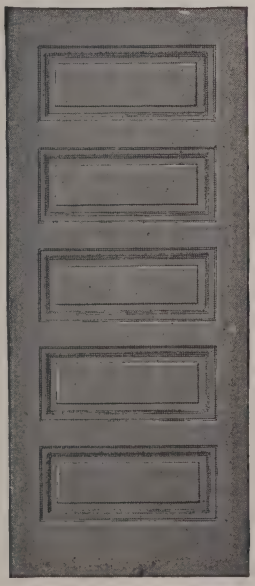
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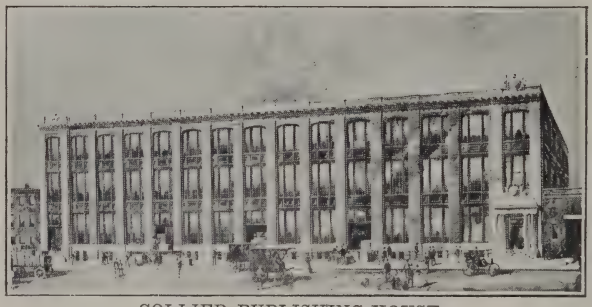
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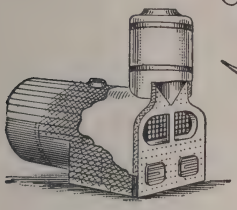
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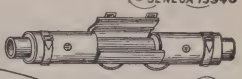
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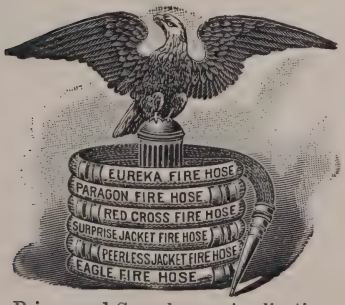
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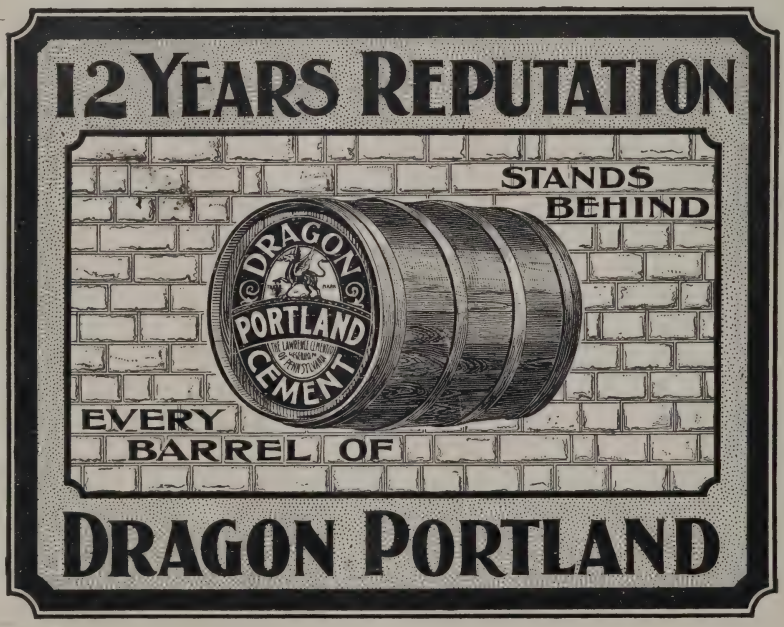
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